Joined at the switch

"Unified" wireless/wired LAN switches are making wireless a standard feature of wired infrastructure.
PAGE 8.

Morphing the data center

Linking key data center equipment to high-speed pipes, sometimes leaves Ethernet wanting.
PAGE 22.

Retailers rev up networks

Radio frequency identification and data analytics are improving store operations.
PAGE 10.

NETWORKWORLD

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May 29, 2006 ■ Volume 23, Number 21

WiderNet

Are all rootkits evil?

Settlement in Sony CD case resurrects old debate.

BY ELLEN MESSMER

COLIN JOHNSON

When a security researcher late last year discovered Sony was using hidden software-cloaking and monitoring techniques to protect copyrights on its music CDs, public backlash prompted lawsuits against the company and a debate ensued about using "rootkits" in commercial software.

The lawsuits wound down last week with a court-ordered settlement that has Sony BMG Music Entertainment offering $7.50 and a free album download to those who bought any of the 15 million rootkit-infested CDs it sold. But the broader rootkit debate seems far from over.

See Rootkit, page 52

Prepping for the worst

FEMA CIO Barry West talks about emergency preparedness post-Katrina.
Page 12.

Microsoft to let users lead Longhorn forward

BY JOHN FONTANA

SEATTLE — Microsoft plans this summer to offer special licenses to users who want to run the Beta 2 version of the Longhorn Server operating system in specific roles within their networks.

The company said last week at its annual Windows Hardware Engineering Conference that it would offer Go Live licenses for Longhorn Server Beta 2 to subscribers of the Microsoft Developer Network and TechNet. The licenses would let those users run Longhorn Server Beta 2 and Internet Information Server (IIS) 7.0 in production. (Microsoft's beta licenses usually forbid testers from running the code in production environments.)

The company also detailed hardware error-checking features and security features, and said Longhorn would have a Beta 3 early next year. It did not say how the Go Live licenses would be constructed or what the cost would be, but it plans to restrict the rollouts to certain server functions or roles.

Microsoft is attacking the server operating system market from bottom to top with versions of Longhorn designed for everything from small businesses to data center deployments. The company says it hopes Longhorn will help continue 15 consecutive quarters of revenue growth in its server and tools business.

Longhorn has a new feature called Server Manager that lets administrators configure servers with only the components they need for specific tasks, such as file servicing, Web serving, DNS or DHCP. Server

See WinHEC, page 14

Layer 2 VPN services not ready to fly solo

BY JIM DUFFY

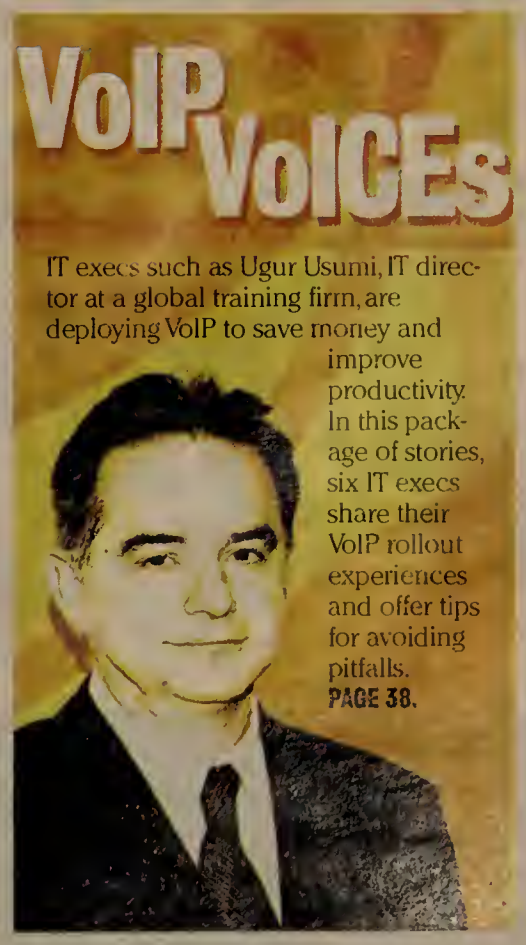
NEW YORK — There's plenty of buzz about Layer 2 VPN services, especially those that boast the familiarity of Ethernet and the scalability of MPLS. But enterprises at last week's MPLScon 2006 conference said Layer 2 services aren't yet mature enough to support demanding service-oriented application architectures, such as those used for large-scale multicasts and utility computing.

What's more, major service providers still have not rolled out offerings such as Layer 2 Virtual Private LAN Services (VPLS) on a broad scale (see graphic, page 16). Verizon, for example, has 3,000 customers for its Layer 3 Private IP VPN service yet doesn't plan to have its VPLS service out for about another year.

All of which helps to explain why IT executives at last week's event mainly talked about their Layer 3 MPLS networks, referring to Layer 2 VPN services in the future tense and as complementary to Layer 3 offerings.

Boeing uses a Layer 3 MPLS VPN to support multicasts to virtual workgroups among its 165,000 employees in 62 countries, said Douglas Hill, associate technical fellow at the aerospace

See MPLS, page 16



IT execs such as Ugur Usumi, IT director at a global training firm, are deploying VoIP to save money and improve productivity. In this package of stories, six IT execs share their VoIP rollout experiences and offer tips for avoiding pitfalls.
PAGE 38.

OVER 50% OF ALL DATA BREACHES COME FROM INSIDE THE PERIMETER. WHAT WILL IT TAKE FOR YOU TO PROTECT YOUR ENTERPRISE?

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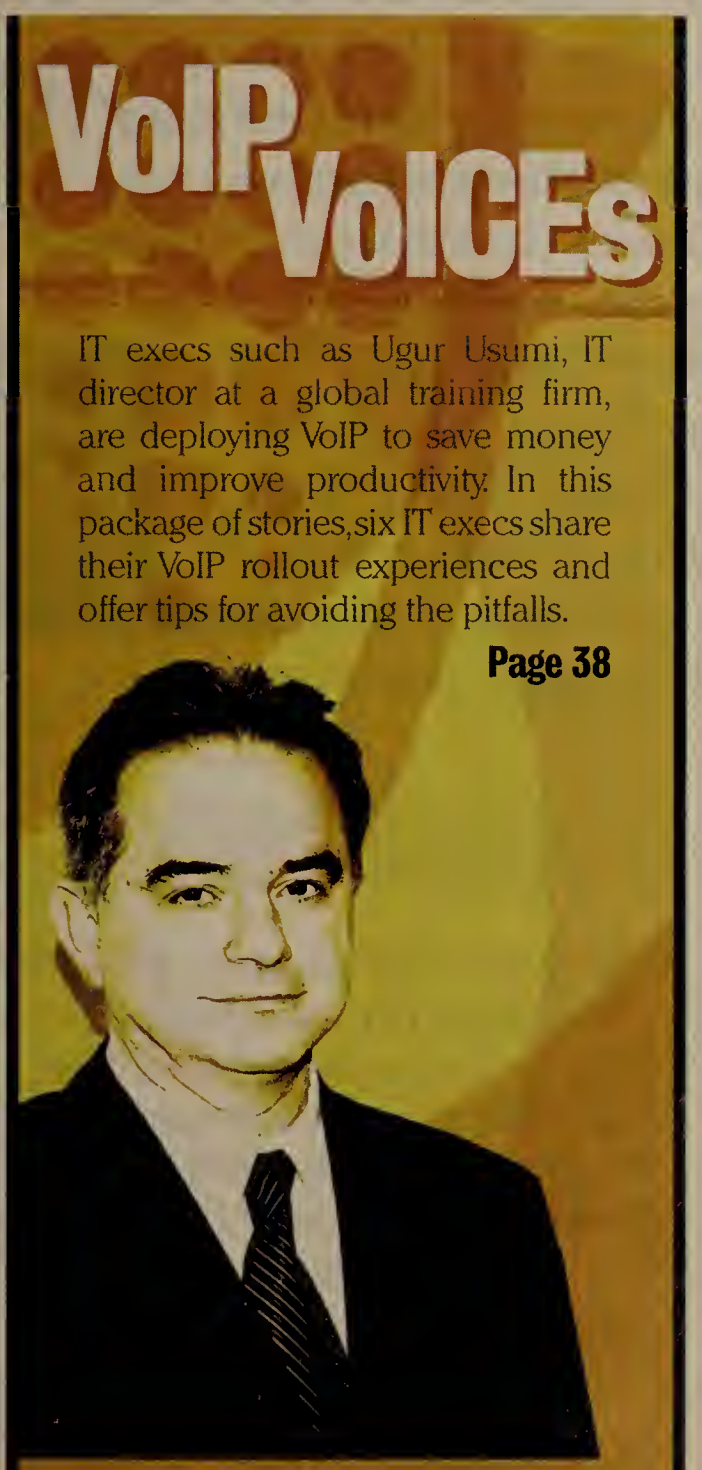
NETWORKWORLD

News

COOL TOOLS

The Treo 700p smart-phone is a dream come true for those searching for the ultimate converged device. Page 34



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Mixed wireless environments
How do you blend wireless, cellular and two-way radio into a single infrastructure? Cathy Zatloukal of MobileAccess Networks explains how its done on this week's Network World Hot Seat. **DocFinder: 3644**

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You want to watch the latest Hot Seat video, but that might interfere with your driving to work. No problem — download the podcast. **DocFinder: 3645**

Buzzblog Sony and Mr. Rootkit
News Editor Paul McNamara wonders about the guy who wrote Sony's rootkit, now that the company has settled the class-action suit over its PC-altering CDs. **DocFinder: 3646**

Technical pain feedback
Test Alliance member James Gaskin discusses those small but annoying tasks we all face — like getting our printers to print envelopes properly. **DocFinder: 3647**

Online help and advice

Ratcheting up SpamAssassin
Help desk guru Ron Nutter helps a user tune this anti-spam tool to really block the spam. **DocFinder: 3648**

What 802.11w will mean for wireless security
Joshua Wright, of the Wireless Vulnerabilities and Exploits project, explains this new wireless-security standard. **DocFinder: 3649**

Defining tactical ROI
Wide Area Networking Newsletter writers Steve Taylor and Jim Metzler show you how, and how to avoid the pitfalls. **DocFinder: 3650**

Encrypting backups to avoid disasters
M.E. Kabay explains why and how he encrypts his backups. **DocFinder: 3651**

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NEWSbits

House panel passes 'neutrality' bill

A U.S. House of Representatives committee has approved a bill that would prohibit broadband providers from blocking or impairing their customers' access to Web content offered by competitors. The House Judiciary Committee voted 20-13 to approve the bill, called the Internet Freedom and Nondiscrimination Act. Some committee members said they had questions about the bill's use of a 1914 antitrust law to enforce network neutrality, but many decided to support the bill after the House Energy and Commerce Committee in April approved a different, wide-ranging telecom reform bill that does not have strong antiblocking rules. The Energy and Commerce Committee bill gives that committee the sole jurisdiction for resolving content-blocking disputes, and several members of the House Judiciary Committee said that bill would take away their oversight of communication antitrust issues.

Treasury scuttles phone tax

The U.S. Treasury Department last week abolished a tax law in a move that will likely result in multimillion-dollar refunds for business users. Many business users started filing for refunds as long as three years ago, as the government debated this issue and it was dragged through litigation. The federal excise tax of 3% on all long-distance calls had been on the books since 1898. According to the Treasury Department, the Internal Revenue Service will issue refunds to consumers and business customers for taxes paid over the past three years in their 2006 filings. The Treasury says that due to the statue of limitations, refunds filed today can only cover the past three years. According to the Treasury Department, the excise tax was originally established as a luxury tax on wealthy Americans who owned telephones.

Sprint sues IBM over outsourcing

Sprint is suing IBM over what the carrier calls a botched outsourcing contract. Sprint signed on with IBM in 2004 with a five-year contract that Sprint expected to save $550 million in customer-service cost reductions over three years. Sprint now says the deal cost the company, and claims IBM owes it at least $6.4 million for 119,000 hours of uncompleted work. In a lawsuit filed this week in U.S. District Court in Kansas, Sprint/United Management — a subsidiary of Sprint Nextel — said IBM didn't provide "contractually promised productivity improvements for 2005." IBM, according to court documents, said Sprint is using an incomplete formula for measuring productivity and the amount of hours owed. An IBM spokesman declined to comment on the suit, according to an Associated Press report.

{quote of the week}

"It's rather attractive to be able to collect tax revenue from non-voting nonresidents. The Supreme Court's silence really dealt a very serious blow to the movement to expand the use of telework."

Attorney Nicole Belson Goluboff, discussing the Supreme Court's refusal to curb state tax laws that discourage telework.

See story at www.nwdocfinder.com/3654

Hummingbird to be acquired

Enterprise software developer Hummingbird has agreed to be purchased by holding company Symphony Technology Group in a deal valued at $465 million. Toronto-based Hummingbird develops content management software that helps organizations manage documents, records, correspondence and contracts. A third party, Tennenbaum Capital Partners, will invest $135 million to help finance the transaction. Hummingbird says the deal will generate immediate cash that will let it continue to focus on its mission of offering ECM and connectivity products. The company reported a $4.9 million profit in its second quarter. Hummingbird competes with other ECM developers, including Interwoven, IBM, EMC and FileNet. Symphony Technology Group owns several companies, including Information Resources and Gers.

Dell opts for Google home page

When consumers boot up their new Dell desktops and notebooks next week, they will find a Google home page and search tools — not the familiar Microsoft versions — the world's largest PC vendor confirmed last week. Dell will factory-install the Google desktop, toolbar, search engine and home page on desktops and notebooks shipping to consumers and small and midsize businesses worldwide. It also will be installed on certain enterprise systems, unless a company specifies its own corporate software tools. Dell plans to begin shipping the new configuration by the end of May. Google CEO Eric Schmidt confirmed the deal on Thursday at a Goldman Sachs Group conference. "Dell is the pioneer in this. They've figured out a way to work with other partners to essentially fill out the Windows platform," he said. "Windows lacks certain features, and Dell figured out a way to add them." The Microsoft versions of those tools will still be installed on the PCs, but they will not boot up automatically unless users changes their default settings.

TheGoodTheBadTheUgly

SAP gets polite. Asked by the IDG News Service about how his company plans to compete against and partner with Microsoft, SAP President of Product and Technology Group Shai Agassi replied: "We will compete like gentlemen. We'll come in with swords, not bombs and guns, and fence. We intend to win, period. We don't intend to give the SMB market to Microsoft."

Piracy takes chunk out of U.S. software. The Business Software Alliance last week shared results from its annual PC software piracy study, which found that about a third of all packaged software installed on PCs worldwide last year was illegal, costing software companies an estimated $34 billion. While the United States had the lowest piracy rate of countries studied, at 21%, it also had the greatest losses, at $6.9 billion.

< Badware Hall of Shame membership grows. StopBadware.org, the organization dedicated to highlighting software that consumers might prefer to avoid, last week added another round of software programs to its Badware Watch List. The latest inductees include FunCade, a gaming application that comes bundled with BullsEye and NaviSearch, and Team Taylor Made's "Jessica Simpson Screensaver."

COMPENDIUM

Location is everything

John Newton of Alfresco, which makes an open source content management system, describes why his booth got such good traffic at a recent conference: It was on the way to the restrooms. **Read more at www.nwdocfinder.com/3643.**

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D-Link switch marks shift in WLANs

Making wireless part of the wired infrastructure will create one network that's easier to deploy and manage.

BY JOHN COX

D-Link's upcoming announcement of a trio of unified wireless/wired LAN switches is the start of a major shift in the way wireless LANs will be deployed.

New silicon and software make it possible for Ethernet switches to process both 802.11 and 802.3 packets, and deliver services unique to wireless traffic, such as radio frequency management and roaming across access points. Wireless is poised to become a standard feature of the wired infrastructure, rather than a separate network, according to analysts and vendors.

Because the two networks are collapsed into one that supports wired and wireless access, the unified network promises to be easier to deploy, simpler to run and manage, and lower in total cost of ownership compared with WLANs that have separate switches and management systems, according to analysts.

"We have seen the cost of endpoint silicon and access points collapse," says Bob Egan, director of emergent technologies for Tower Group. "But the infrastructure costs associated with WLANs has just skyrocketed. Now people are finally starting to address the core infrastructure, where the key cost issues are."

Creating a unified network

Equipment makers face a range of choices on how to integrate wireless to create a unified network. D-Link's new product is a case in point.

There are three D-Link models, all Layer 2, stackable Gigabit Ethernet switches. One model has 24 ports, a second 48, a third has 24 ports with Power over Ethernet. Importantly, the switch supports the 802.1X port-based authentication standard, which increasingly is being used for wired as well as wireless clients.

But all also support the full range of expected wireless features and standards, such as wireless roaming between access points and switches, centralized access point management, radio frequency management, rogue access point detection and containment, and for security, the 802.11i-based Wi-Fi Protected Access and WPA2 specifications, as well as the older Wired Equivalent Privacy specification.

The switches come with a license bundle for 10 companion D-Link access points, which can be upgraded to 25 per switch.

The companion access points are key to D-Link's implementation. The wireless functions are handled by software licensed from NextHop (IP Infusion is another software maker in this market).

Part of the code runs on the switch and part on the access point, where the translation between 802.11 and 802.3 takes place. The access point sends pure 802.3 Ethernet packets back to the Layer 2 switch for processing. That processing is handled by a switch processor from Marvell, with the NextHop software, on a separate host processor, controlling wireless authentication, security and management functions, and coordinating with the NextHop code on the access point for radio frequency management, load balancing and other jobs.

Jennifer Wu, D-Link product manager, wasn't specific about future products, but she made it clear that D-Link intends to exploit a new generation of switch silicon that will support Layer 3 routing and handle both 802.11 and 802.3 data packets in the switch itself, instead of in the access point. Such a device "offers more security and can process packets faster," she says.

Those new chips are being created by start-ups such as SiNett as well as established chip makers such as Broadcom and Marvell. The new chips incorporate more logic to process the 802.11 data packets along with the standard Ethernet packets.

"To me, 'unified' means all packets are centrally processed by the switching processor in their native format," says Shrikant Sathe, SiNett co-founder and vice president of marketing and operations. "The switching silicon sorts these [packets] out and then does the right thing with them."

Such an approach gives the switch full visibility into all the information contained in the wireless packets, he says. Among other things, that visibility makes it easier for intrusion detection/prevention systems to deal with wireless traffic.

He says this native processing of wireless packets will become even more critical when 802.11n, which promises wireless throughput of better than 150Mbps, is implemented in products in late 2007 or 2008. "These [other] architectures will dead-end," Sathe says. "When 802.11n hits the market, you will run into limitations in terms of supporting large numbers of 802.11n access points."

Not everyone agrees.

"I find it ironic that a vendor would claim this is the only scalable approach, because the speeds/feeds demands on [existing] wired infrastructure is orders of magnitude greater than 802.11, even with the introduction of 802.11n in 2008," says Pat Calhoun, CTO for Cisco's Wireless Business Unit. "Cisco looked at many chipset vendors that are building integrated wired and wireless chipsets. We found time and again that these vendors had nothing above and beyond what Cisco already has. We looked at SiNett, and I'll leave it at that."

Calhoun argues that the real value of a unified wireless/wired LAN lies not in the data processing plane but in the control plane: in a common set of policies for authentication, security and management, which can be applied to any client.

Cisco last year introduced the Wireless Services Module for the Catalyst 6500 switch. The module is, in essence, a WLAN switch that draws power from the 6500 chassis, uses the 6500 backplane and, most importantly, can make use of other modules in the same chassis, such as a firewall, or the Cisco Secure Access Control Server. "Translating 802.11 into 802.3 is a well-known science," Calhoun says. "Once you do that, you want to leverage the common infrastructure you've set up for your networks."

That means tying into the backend management and authentication systems and the various network services. Asked to be specific, Calhoun hesitates. "A lot of innovation still needs to be done," he says. "Especially on the management side. That's an area where we will be innovating a lot more."

"You need one single management interface," D-Link's Wu agrees. D-Link's new switches have that, she says. "But hardware [design] is important. It can shift functions to the switch silicon, which is simpler and cheaper. [Unification] cannot all be software-based."

In the end, these apparent differences may not be substantive. "I define a unified switch in the enterprise context as 'no separate wireless switch,'" says Craig Mathias, principal for Farpoint Group. "You plug something into it, and the switch figures out what it is and how it should be treated."

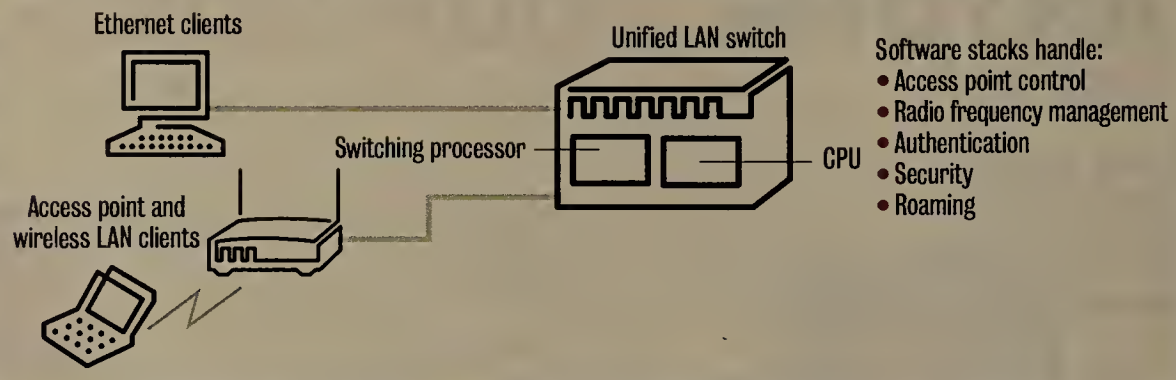
Next-generation silicon from companies such as SiNett will become the standard hardware for such switches, even as the key differentiators are implemented in software, ranging from the chip level to the application level.

Enterprise network executives should be talking with their network vendors about the migration strategy to unified switches, about the road map to bring wired and wireless security together, and about switch capacities in the future, Tower Group's Egan says.

"Unifying management and security is going to define the winners and losers [among vendors] here," he says. "They all have to address this."■

Merging wireless and wired nets

New silicon and advanced software promise to create one LAN switch handling wired and wireless traffic. Still needed are unified security, net management and a services model.



USB tokens tighten up secure-WAN links

Start-ups KoolSpan and Sweetspot combine two-factor authentication and encryption.

BY TIM GREENE

The latest additions to corporate secure-WAN toolkits are USB tokens that authenticate and encrypt traffic, tighten security and make it simpler for users to make connections vs. using standard VPN technology.

Two start-ups, KoolSpan and Sweetspot, incorporate two-factor authentication via their tokens, increasing the security of user authentication as well as encrypting traffic. In KoolSpan's case, once a connection is made, the devices change their encryption keys for every packet sent, further boosting the secrecy of the data sent.

Alternatives would call for a VPN plus separate two-factor authentication such as RSA Secure ID tokens.

KoolSpan's SecureEdge gear consists of keys, its name for the tokens, and locks, which are appliances located on corporate networks and protected from the Internet by firewalls. The keys and the locks have embedded smart cards that contribute to two-way, two-factor authentication; the devices authenticate to each other rather than just the remote device authenticating one-way to a central server.

Once authenticated to each other, the devices go through a process to connect the remote machine via a Layer 2 Ethernet bridge link (see graphic, above). Traffic across this bridge is encrypted using 256-bit Advanced Encryption Standard (AES), and the encryption key is changed for every packet sent. AES traffic over a standard IPsec VPN uses the same encryption key for an entire session.

Packet-by-packet key changes ensure that even if traffic is intercepted and a key is somehow compromised — which would take powerful computing resources and time — the attacker would get only one packet's worth of data and then have to try to guess the key for the next packet by trying multiple possibilities, according to Nick Selby, enterprise security analyst for The 451 Group. "This is very strong encryption," he says.

Sandy Spring Bank of Olney, Md., purchased KoolSpan devices because they are simpler to use and more secure than the alternative it had used — a combination of an RSA smart card token and a Cisco VPN, says Curt Purdy, information security officer for the bank.

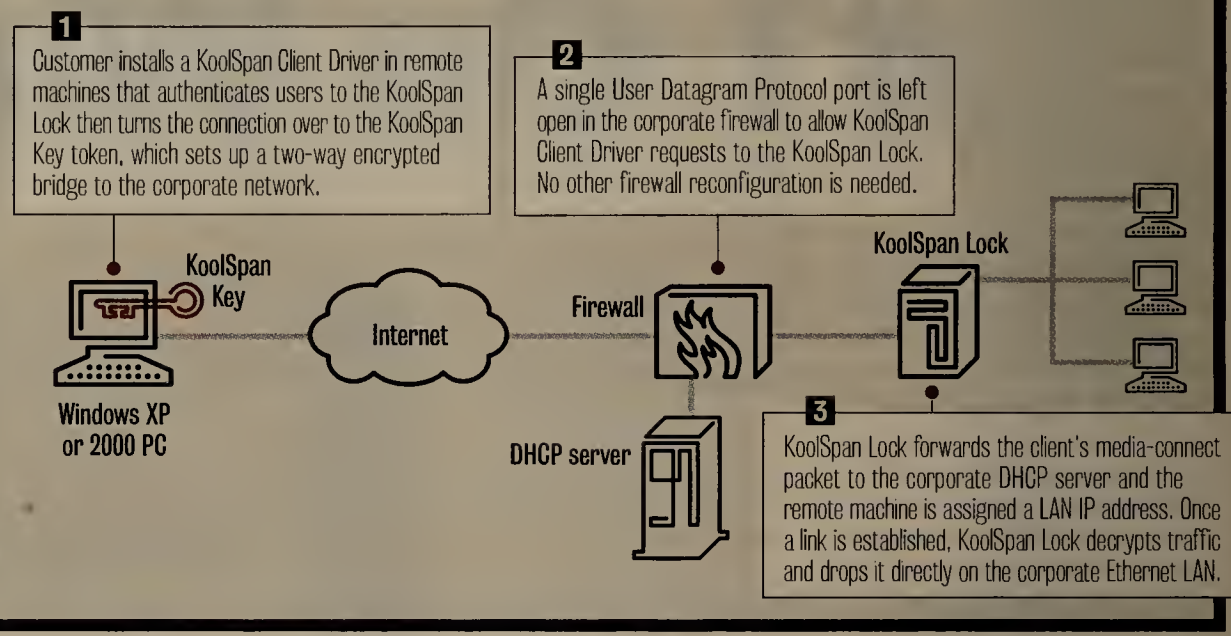
Unlike RSA tokens, the KoolSpan keys require no manual copying of passwords from the device to a computer screen. "There's no fumbling with a fob, looking at the code on it and typing it in and having it change halfway through," he says. "You just stick the USB key into the laptop and type in the password."

Plus RSA tokens require a separate server that demands administrative time for upgrades as well as resultant upgrades to the bank's RADIUS server, he says. KoolSpan's gear is self-contained, and he estimates it requires 2% of adminis-

See VPN, page 52

KoolSpan's token technology

KoolSpan sets up secure links between sites or between remote users and corporate networks using hardware tokens and a network appliance that authenticates users and encrypts traffic over a Layer 2 bridge.



Retailers hone data-handling skills

Business intelligence, RFID, data synchronization technologies improve store operations.

BY ANN BEDNARZ

CHICAGO — The key to keeping stores stocked with the items customers want is good information, and retailers are doing all they can to keep system data clean, accurate and accessible to their suppliers.

To facilitate better data handling, retailers are tackling projects to improve business intelligence, allow data synchronization with partners and apply RFID technology. Early adopters shared their stories last week at the Retail Systems show in Chicago.

Among them was AutoZone CIO Ken Brame, who talked about the analytics platform that helps the $6 billion auto parts retailer decide which items to stock in each of its 3,700 stores.

Millions of parts are available, but the average AutoZone store can only accommodate 22,000 items. So AutoZone regularly crunches 25TB of data — including sales history and vehicle registration information organized by ZIP code — to determine which parts local customers are likely to need based on the cars they drive, according to Brame.

To give the stores access to current inventory data, Brame bolstered the network that links AutoZone's stores to its corporate offices and to the company's vendors. He swapped out satellite links for broadband connectivity so retail staff can quickly view inventory at nearby stores, distribution centers and partners' salvage yards if a customer needs a part that isn't available on-site. "Satellite technology is very good for things like credit card transactions, but with the kinds of data we're moving back and forth and checking, we needed faster turnaround," Brame said.

AutoZone isn't alone in upping bandwidth to its stores. According to research released at the conference, 22% of retailers have started or will start in 2006 a project to outfit stores with high-speed connections.

Network infrastructure projects, in general, are a top priority for retailers, according to the Retail Technology Study conducted by Gartner and RIS News of 300 retailers. One-third of retailers surveyed have a voice/data convergence project in the works or due to begin this year, and 27% are implementing or about to implement wireless LANs.

Also on retailers' shopping lists are tools to assist merchandising. Almost 40% of respondents plan to start a major project to upgrade their sales forecasting capabilities this year or within the next two years. Other merchandising-related projects due to be launched target assortment planning (37%), price optimization (36%) and item allocation (34%).

See Retail, page 12

IT obstacles

A lack of skilled people is the biggest barrier to improving corporate efficiency, according to 300 retailers surveyed for the latest Retail Technology Study conducted by Gartner and RIS News.

Obstacles to efficiency*

* More than one response allowed.

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Retail

continued from page 10

The survey also shows that while plans to implement RFID technology aren't as solid as other IT areas, the wireless tracking technology is on a growing number of retailers' radars. Gartner found 4% of respondents are in the process of implementing RFID technology and 12% plan to kick off projects this year.

Item-level tagging to begin

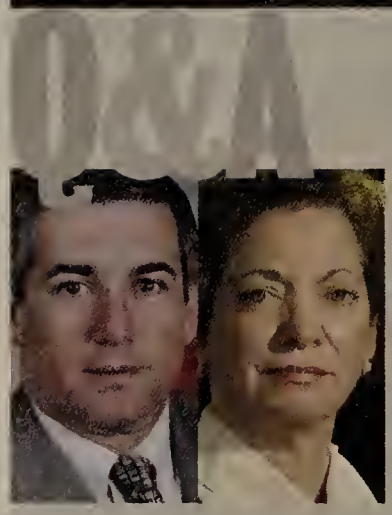
Best Buy is one of the dominant retailers helping to drive RFID adoption. CIO Bob Willett talked about an emerging application for RFID in retail settings: item-level tagging. Much of the RFID focus in the world of retail and consumer goods so far has been on tagging cases and pallets of goods. But industry watchers agree, item-level RFID tagging is the next frontier.

Best Buy recently wrapped up a pilot project that involved putting RFID tags on video games destined for one of its Minneapolis stores. One goal was to provide better inventory information so sales associates could spend more time helping customers and less time stocking shelves or digging for merchandise in the back room.

It worked, Willett said. Staff spent less time replenishing shelves and 30% more time on the floor, he reported. At the same time, sales of RFID-tagged merchandise rose 18.7% and on-shelf product availability increased from between 80% and 88% to more than 98%.

Best Buy plans to extend its pilot to 50 stores, Willett said. But he's holding off implementing item-level tagging across all Best Buy stores until the technology matures.

Integration between RFID products and supply chain applications such as forecasting and auto replenishment systems isn't complete, Willett said. "We would sign up now to do the entire chain in games, music and DVDs if the capability was there. It isn't there. It won't be there probably for another 18 months to two years." ■



FEMA talks up its IT changes

The office of the CIO for the Federal Emergency Management Agency has made several changes in the past year to better communicate with state and local officials, support citizens who need assistance, and keep better track of assets such as food and water. Network World *Senior Editor Denise Pappalardo recently spoke with FEMA CIO* ***Barry West*** *and Deputy CIO* ***Jeanne Etzell*** *about some of these changes. (West is about to make a career change as he heads over to the Department of Commerce to become its CIO.)*

What are some of the changes in your department that make FEMA better equipped to aid in future disasters?

West: There's a lot that has happened since last hurricane season. What we've done is gone back and look at our core systems that we used and significantly enhanced those systems. One example is NEMIS, the National Emergency Management Information System. This system processes all disaster victim claims for issuance of checks for aid. We've gone back and made this system more robust using the latest and greatest from Oracle. And we've moved applications that were running on Microsoft to Linux. The system does a lot of replication. We have been able to take advantage of some of the Web services features that don't require as much transfer of data.

How will the upgrade better support disaster victims?

West: NEMIS was originally designed to support 20,000 to 25,000 applications daily. During [Hurricane] Katrina the system was stretched to support nearly 110,000 applications daily. Going into this hurricane season we're trying to make it more robust.

Etzell: We're trying to process 200,000 registrations per day in addition to the normal caseload activities that occur at the call centers. What we're testing right now is putting a load on the application to simulate the call center load plus 200,000 transactions in a 24-hour period. Our results look positive, but we have an independent test firm coming in to test and get me the specifics. . . . By upgrading to the new Oracle cluster servers and grid environment we have been able to eliminate some replication that shut down the system for backup.

There were reports post-Katrina that some citizens had to return checks to FEMA. What has been done to minimize fraud?

West: We're now using ChoicePoint for all registrations. It's a service that verifies and authenticates data against an applicant. If a person enters their name, Social Security number and address, this database is smart enough to know if something doesn't add up.

I understand that about 40% of all applications for assistance were processed via the Web. Are you shooting for a higher percentage?

West: We would love to see more. Those numbers also include FEMA going out into the field with our Mobile Disaster Response Centers [MDRC] assisting with applications. There is a whole host of ways those Internet numbers are increasing.

Etzell: This year we are piloting a program called Internet Cafe where we have modified mobile homes to have 20 PCs and 20 telephones. They will be moving around in the disaster theatre. Victims will be able to register themselves from these units.

What type of wireless technology is being used?

Etzell: Satellite Internet access. We have about five vehicles that we are piloting this season. And then we'll make a decision for next season if we'll expand or not. These units are in addition to our 55 MDRCs that are directly connected to FEMA's network.

What other technology changes have occurred in the past year?

West: We've just about 99% completed our new network at FEMA, which will make us IPv6 ready from a hardware perspective. We will still need to go back and look at some of our software that is hard-coded with IP addresses that we'll have to change.

What benefits does the new network bring?

West: More IP addresses — that's probably the biggest benefit. There is also some added security, such as port security.

You've said that communication between first responders was a significant problem post-Katrina. What has changed to improve this?

West: One area that we've tried to focus on is situational awareness. This is having information in the hands of all of those involved at the same time regardless of location. In other words, the information could be originating from FEMA or out in the field or [Department of Homeland Security] headquarters or the Coast Guard.

Etzell: It's called HSIN, or Homeland Security Information Network.

What about physical communication on the ground? How has that improved?

West: When the last hurricane season ended we took a step back and really worked closely with DHS and some of our other key players such as the Coast Guard. First thing we did was take an inventory of all of our communication assets. We really didn't have that going into last hurricane season. We knew what FEMA had, but, for example, we didn't know what the Coast Guard had as far as tactical communications. So now we put in place standard operating procedures where if we have an event in a certain area of the Gulf Coast region we know what assets are near that event.

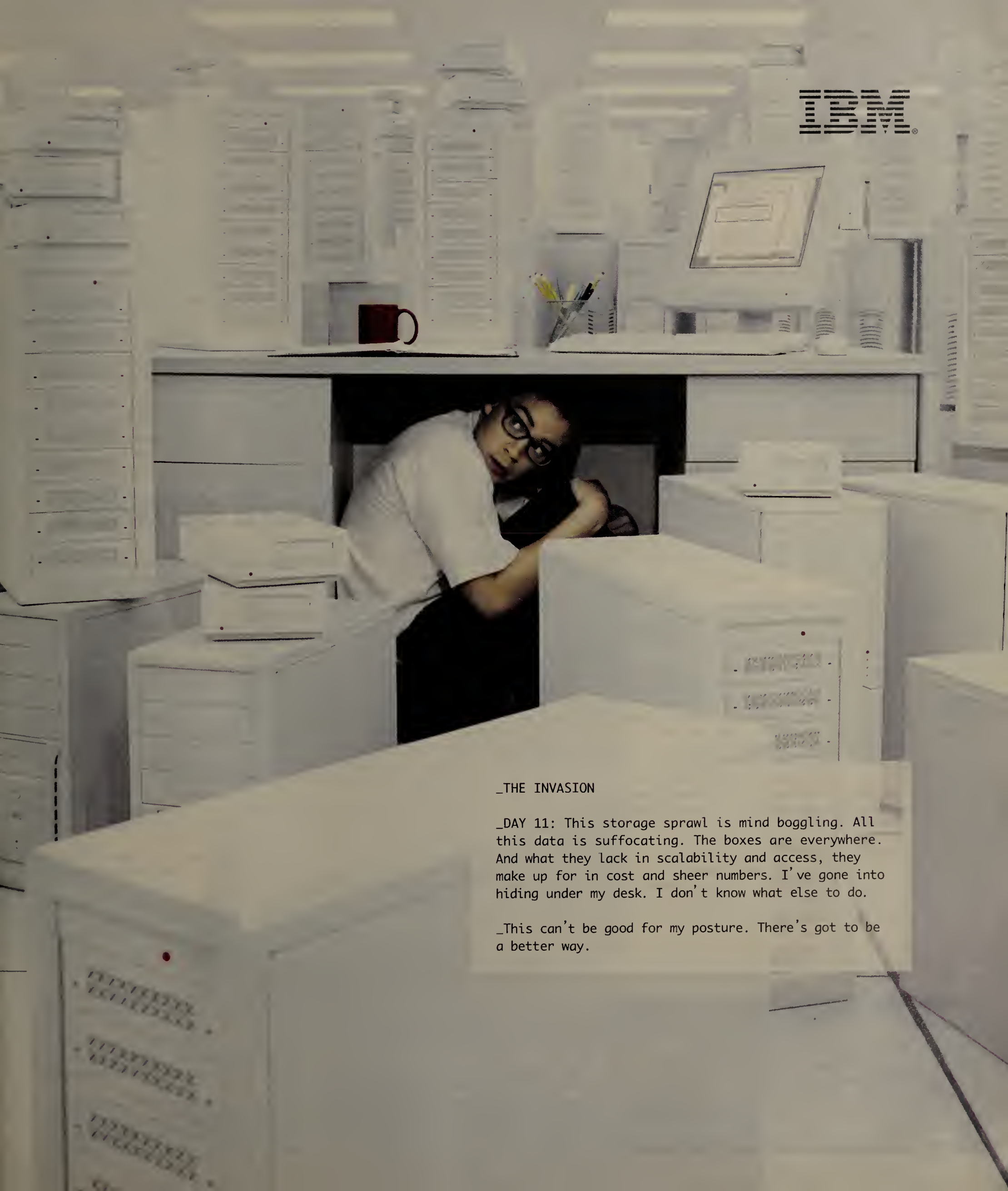
How is FEMA using GPS for asset tracking?

Etzell: GPS we used in a very rudimentary way last year and we now have what we call total asset visibility. It's a system that's going to track, via GPS technology and other software, the location of current loads of certain commodities going through two of our logistic centers, one in Atlanta and the other is in Fort Worth, Texas. . . . There are select vendors that can track the shipments by the trailer load. It tracks the trailers not the trucks.

What assets are you actually tracking with the GPS system?

Etzell: Water, ice, meals, plastic sheeting, tarps, generators and select vehicles such as our NDMS [National Disaster Medical Systems] teams. They have 99 vehicles, and all 99 are tracked via GPS. And last year when we had such challenges in the Gulf Coast we turned the GPS devices on to find some of the NDMS teams. ■

Read a longer version of the interview at www.nwdocfinder.com/3658



_THE INVASION

_DAY 11: This storage sprawl is mind boggling. All this data is suffocating. The boxes are everywhere. And what they lack in scalability and access, they make up for in cost and sheer numbers. I've gone into hiding under my desk. I don't know what else to do.

_This can't be good for my posture. There's got to be a better way.

WinHEC

continued from page 1

Manager includes 17 roles.

"In Beta 2 almost all the roles are enabled, but not all the pieces are there for every role," said Jeff Price, senior director for Windows Server Product Management. "Testers put the server through its paces for the deployment scenarios they want, but they can't go to production because of our licenses." Price said Microsoft is still working through what roles will be released first and would reveal more details at the company's annual TechEd conference scheduled for the week of June 12.

In addition to the Beta 2 rollout, Microsoft said the first release of Longhorn Server, slated for the second half of 2007, would be the last that comes in a 32-bit version. Starting with Longhorn Server R2 in 2009, the server will only ship in a 64-bit version. Microsoft is converting most of its application servers to the 64-bit platform, with SQL Server and Exchange 2007 leading the way. Price added that Microsoft was not revealing what features are planned for Longhorn R2.

Beta 3 of Longhorn will be released in the first half of 2007 and will include the new Terminal Server Gateway Server, according to Microsoft. The company also plans to release within 180 days of Longhorn Server its hypervisor virtualization technology code-named Viridian. It previously said Viridian would ship after Longhorn but did not provide a definitive time frame.

Analysts say Microsoft is pulling out its Go Live licensing for Longhorn to get real-world exposure for the server.

"Part of Go Live is to signal that real testing is starting," said Michael Cherry, an analyst with independent research firm Directions on Microsoft. "If this stuff is not in production, how do you get valuable feedback? The server people need to stress this stuff."

Triple threat

Microsoft is lining up three major projects for testing and eventual release. Last week, the company released the second betas of Windows Longhorn Server, Vista and Office at its annual Windows Hardware Engineering Conference.

Software	What's new	What's coming
Longhorn	The second beta is available.	Feature-complete Beta 3 due in first half of 2007.
Vista	Beta 2 is the "consumer beta." Will include Application Compatibility Toolkit 5.0.	Still on track for November release to business users.
Office	Beta 2	Nearly ready to go; release set for November to business users.

Cherry also said coupling the server with IIS 7.0 is likely a move to encourage usage of ASP.Net.

Microsoft has offered Go Live licenses for other technology, including SQL Server and .Net.

"For customers that need some features sooner and can participate with Microsoft this is a win-win situation," said Tyson Hartman, CTO of systems integrator Avanade, which is a joint venture between Microsoft and Accenture. "Certainly it speaks to the quality and stability of the product."

Even so, Microsoft's Price said he does not expect mass rollouts of Longhorn Beta 2.

"We are taking the time to make sure we get this right because we want to make sure Longhorn is a clear step forward from Windows Server 2003," said Bob Muglia, senior vice president of Microsoft's server and tools division.

In addition to the surprise announcement on production deployments, Microsoft began to detail other features it plans to include in Longhorn.

Addressing errors

The company is adding a new infrastructure within the operating system called the Windows Hardware Error Architecture, which is designed to provide a standard way to handle system hardware errors in server hardware that supports WHEA.

WHEA lets users manage potential error sources such as processor, memory, cache and I/O bus. Hardware vendors will stipulate certain attributes to be managed on each hardware component. WHEA will not cover such components as fans and will not support PCI Express in the first version of Longhorn, according to Microsoft.

Microsoft also plans to include its BitLocker technology in Longhorn. The file encryption technology is a highlight of the Vista client operating system.

In the server, BitLocker will be used to protect servers by preventing malicious software or users from executing a boot sequence that is different than what is stored in BitLocker. The technology, which relies on a Trusted Platform Module installed in the hardware, is the first hint at Microsoft's Next Generation Secure Computing Base technology code-named Palladium.

In addition, Microsoft showed the BitLocker technology was a good way to secure branch-office deployments of the server but stopped short of saying Longhorn would include a specific branch-office version.

Also in the security area, Longhorn will include integration of digital rights management with the identity federation technology, Active Directory Federation Services, which is part of Windows Server 2003 R2.

Muglia also said Windows Small Business Server R2 would ship sometime this summer and Windows Server Compute Cluster Edition would ship by year-end. Microsoft's mid-market server bundle code-named Centro is scheduled to ship in 2008. Centro brings together Longhorn, Exchange Server and security technologies for midsize companies.■

Corrections

- The story "Airport saturates locale with wireless net" (Feb. 27, page 19) should have listed the cellular adapters used by airport laptop users as a Verizon-branded Sierra Wireless AirCard.
- The story "Gartner analyst: Resist Gig Ethernet" (May 22, page 1) should have noted the cost of a Gigabit port was 80% to 300% more than the price of a Fast Ethernet port.

IBM boosts storage software

BY DENI CONNOR

IBM last week enhanced popular data pooling and storage virtualization software to include business continuity and disaster recovery capabilities, as well as faster performance and support for more storage platforms. The company also recently announced that more than 2,000 customers now use its storage virtualization software.

IBM is adding 4Gbps Fibre Channel support, increased interoperability with a variety of disk systems and asynchronous replication capability to its TotalStorage SAN Volume Controller (SVC), letting customers support faster Fibre Channel storage-area networks and protect data on storage systems.

The SVC software runs on a cluster of x86-based IBM computers attached to Brocade Communications, McData and Cisco Fibre Channel switches, where it can manage data on those storage systems. It creates pools of disks from those storage systems, which can be mapped to a set of virtual disks for use by host server applications. These applications may be the migration of data for information life-cycle management purposes or the replication of data for business continuity.

The new version, SVC 4.1, includes a global mirroring function that lets customers replicate data across locations of greater than 100 miles. Global Mirror, which has no distance limitations, is based on IBM's synchronous Metro Mirror technology, which supports replication distances of only 100 miles. Because Global Mirror is asynchronous and supports longer latencies, longer-distance replication is possible.

"The latest version of IBM SVC brings good news to those who need to support data protection for business continuity and disaster recovery over long distances with asynchronous remote mirroring and replication," says Greg Schulz, senior analyst for StorageIO.

"The support for asynchronous replication will enable SVC nodes to leverage IP and WAN network interfaces natively without having to rely upon external third-party asynchronous technologies such as McData's UltraNet Edge Storage Router," Schulz says.

IBM says global mirroring is important because of natural disasters such as Hurricane Katrina that can cause damage over more than 100 miles.

In addition, Global Mirror and Metro Mirror do not require the same storage arrays at both locations, allowing customers to deploy older storage at the secondary disaster recovery site. For instance, a customer may replicate data between an IBM TotalStorage DS4800 at the primary site and an older EMC Symmetrix at the secondary site.

SVC 4.1 also supports 4Gbps Fibre Channel environments and more than 80 disk systems, including Hitachi's TagmaStore, the IBM DS4700 and the OpenVMS operating environment.

Further, SVC lets customers replace nodes in the SVC cluster with newer ones without disrupting access to data.

The use of storage virtualization products such as IBM's SVC is on the rise. An IDC study shows that vendors such as IBM, FalconStor and EMC shipped more than 28 petabytes of virtualization software and appliances in 2005, a more than fourfold increase over 2004.

IBM's SVC competes with EMC's Invista and the built-in virtualization capabilities of Hitachi's TagmaStore Universal Storage Platform. Although EMC's Invista does not have asynchronous replication capability, the company is expected to build it in with its acquisition of Kashya, a remote replication vendor.

IBM's SVC 4.1 is scheduled to be available next month starting at $42,500. Existing Metro Mirror customers will get Global Mirror at no cost. Metro Mirror and Global Mirror each start at $10,500.■

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MPLS
continued from page 1

giant's computing and network operations unit. The Chicago company has conducted multicasts with as many as 6,000 participants across its MPLS backbone.

"We found that as these events got larger and larger, our [media] servers were incapable of sourcing that many unicast flows," Hill said. "We also use multicast for some of our production control applications."

The Boeing network supports five classes of service for 5 million minutes per month of voice and video over IP applications, Hill said. The company opted for a Layer 3 implementation in 2000 so that it could hand off management of its routing tables to its service provider, AT&T.

"Using a Layer 1 and Layer 2 transport basically means that we were responsible for the entire routing architecture end-to-end, and the maintenance of that backbone end-to-end," Hill said.

Also, Draft Martini was the only MPLS Layer 2 option when Boeing decided to go from an ATM and frame relay hub-and-spoke architecture to a meshed MPLS VPN in 2000, Hill said. Multicast and QoS requirements were lacking, and latency and jitter were challenges in the old Layer 2 ATM/frame environment, he said.

Making the shift has eliminated redundancies and greatly reduced maintenance, enabling Boeing to slash its telecom costs in half.

Nonetheless, the company is evaluating VPLS for its metropolitan regions. But Hill said the technology "still has a long way to go."

The Securities Industry Automation Corp. (SIAC) turned to Layer 3 MPLS VPNs looking for a way to safely multicast market data between exchanges and other financial institutions after the Sept. 11 attacks.

The VPN services, which adhere to the IETF RFC 2547bis specification, form the guts of SIAC's Secure Financial Transaction Infrastructure network.

"When we were building this, VPLS technology was still very immature," said Naishen Wang, senior manager of communications planning. "Another thing with multicast is we do entitlements" where the customer can choose between multicast products. "It's a little harder to do in a VPLS environment."

Layer 3 was also adopted by financial brokerage AG Edwards for its service-oriented architecture, which is designed to ensure that QoS is applied to voice and video services.

"We're under a lot of pressure ... to provide a service-oriented architecture that allows our business units to create services that bring up applications really fast," said Ken Owens, communications architect at the St. Louis company.

The network also ensures application availability. "Downtime in the financial industry is a term no one uses. There is no downtime," he said.

MPLS supports uptime, Owens said, through its "any-to-any" characteristics that facilitate rapid failover to a secondary data center should the primary fall offline.

"We could lose one of our data centers and still function on the other data center 100%," he said.

AG Edwards is implementing a three-layer architecture, with MPLS serving as the virtualization layer between the physical infrastructure and logical services layers.

MPLS facilitates a utility or grid computing model of dynamic resource allocation in which it "advertises" the services available to and between business units, Owens said.

The MPLS-enabled Layer 3 Border Gateway Protocol backbone connects 750 sites and replaces a carrier-managed Layer 2 frame relay network.

VPLS also is viewed as an eventual replacement for frame relay, more so than as an alternative to Layer 3 MPLS VPNs (www.nwdocfinder.com/3657), experts said.

And the limitations of VPLS are not lost on the technology's authors.

Marc Lasserre, chief scientist at Lucent, acknowledged the need to further optimize VPLS for service-oriented applications such as multicast.

He, industry analysts and carriers said that Layer 2 and 3 MPLS VPN technologies will complement each other more than compete.

It may be as simple as an enterprise deciding to opt for Layer 2 to retain management of its routing tables or Layer 3 to outsource that responsibility.

"I don't think it's a zero-sum game," said Josh Holbrook of the Yankee Group. "I don't think one of those services will prevail over the other. Layer 2 reduces complexity... but more organizations are comfortable outsourcing their routing tables."

"There's still a lot of folks who talk about Layer 2 vs. Layer 3 as a holy war," said Jamey Heinze, senior director of product management for data and media services at Broadwing Communications. "But we kind of see it as a blessed synergy, or two services that live in harmony with one another." ■

VPLS service status

Virtual private LAN service plans from the top 10 U.S. Ethernet service providers, listed in order of market share based on revenue.

Service provider	VPLS status
AT&T/SBC	Planned
Verizon/MCI	Planned
BellSouth	Planned
Cogent	Not offered
Time Warner Telecom	Offered
Yipes	Offered
Qwest	Planned
Sprint	Planned
OnFiber	Offered
Level 3/WilTel	Offered

SOURCE: VERTICAL SYSTEMS GROUP

Flaw found in Symantec antivirus

BY ROBERT MCMILLAN, IDG NEWS SERVICE

Security researchers at eEye Digital Security have discovered a serious flaw in Symantec's enterprise antivirus software that could be used by hackers to create a self-replicating worm attack against Symantec users.

Because Symantec has not yet confirmed the existence of the problem, much less patched it, eEye is offering few details on the vulnerability, which was disclosed last week. If confirmed, the threat to users would be severe because the security software is so widely used, experts say.

"This is definitely a wormable flaw," says Mike Puterbaugh, eEye's vice president of marketing. "It does allow you to take remote control of the system."

Similar to viruses, worms are able to spread from computer to computer, and past attacks such as 2003's Blaster and Slammer worms were widespread.

Symantec is evaluating eEye's claims and "if necessary, will provide a prompt response and solution," a Symantec spokesman said last week.

EEye Chief Hacking Officer Marc Maiffret believes it will take Symantec a "month or two" to patch the problem. "The vulnerability is pretty straightforward for them to identify within their code," he says.

Version 10 and greater of Symantec's enterprise antivirus software is affected by the flaw, but the company's consumer products do not have the bug, Maiffret says.

This is not the first flaw to be reported in Symantec's security products, which have increasingly come under the scrutiny of hackers and security researchers over the past year. Last December, researcher Alex Wheeler discovered a flaw in Symantec's Antivirus Library that could let remote attackers gain control of systems that used Symantec's products.

In October a critical flaw was found in the company's Scan Engine software. Scan Engine is Web server software used by developers to incorporate Symantec's scanning technology into their own applications.

The most serious of these now patched problems concerned a design flaw in Symantec's authentication mechanism, allowing anyone who understands the underlying communication protocol to seize control of the Scan Engine server. ■

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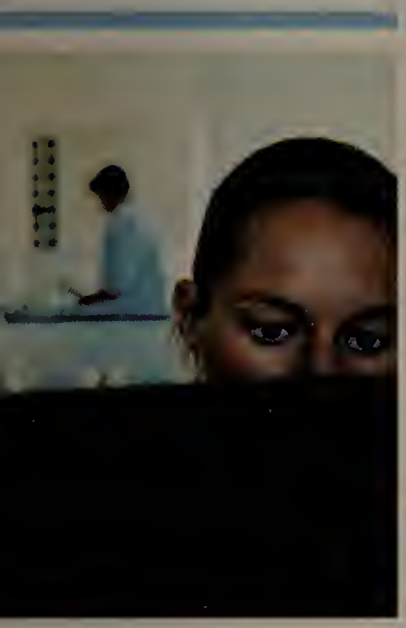
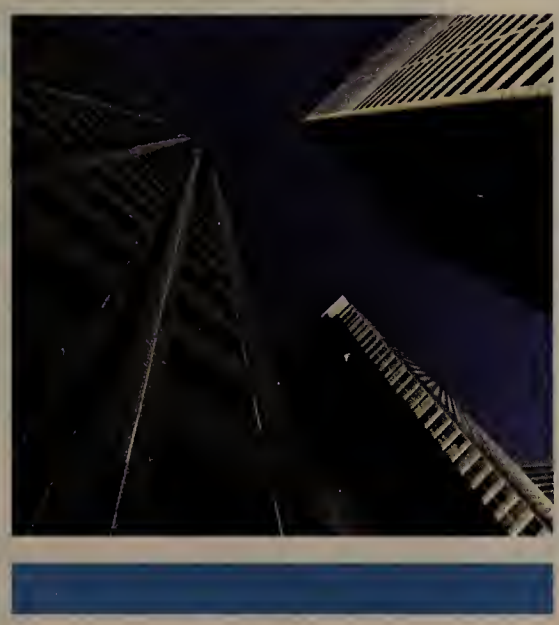
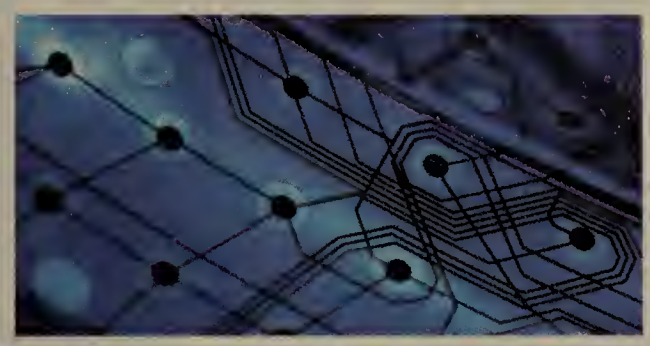

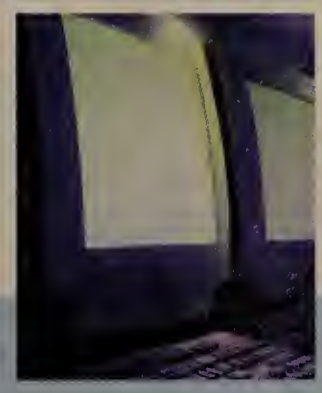

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NET INFRASTRUCTURE

Short Takes

■ **Radvision** last week replaced its line of viaIP multipoint conference unit and gateway products with a new hardware platform called Scopia capable of handling more calls from more devices. The new product family will have three models, ranging from the 1U-rack unit Scopia 100 for small and midsize businesses that handle 12 ports of audio, up to the Scopia 1000 chassis, which has room for as many as 18 blades and can handle 330 video calls and 1,700 ports of audio simultaneously. In terms of video, the initial release of the Scopia platform will support up to 4CIF video (standard television) in any given call. With vendors such as LifeSize, Tandberg and Polycom starting to ship high-definition video systems, future Scopia updates also will support HD video for those that want to take advantage of the increased resolution. A new version of the company's iView management suite will let larger organizations mesh hardware and software MCUs to handle large calls. Scopia will be available for order this week with large-scale implementations priced around $2,000 per port. The Scopia 100 will be priced starting at around $30,000.

■ **Zfone,** free software that encrypts VoIP calls in a way that may circumvent government eavesdropping laws in some countries, is available to Windows users. Zfone was developed by Philip Zimmermann, the creator of the e-mail encryption tool Pretty Good Privacy. The software works in a peer-to-peer manner, exchanging encryption keys directly between the two people making a voice call. Other approaches, such as the commonly used public-key infrastructure, rely on a centralized database, usually hosted by a third party, to manage keys. The distinction is important in places where the debate about the rights of governments to eavesdrop on citizens' phone calls is growing increasingly heated. Zfone presents a challenge to the U.S. government's ruling that VoIP providers will soon have to turn over call detail records, as some regular phone companies have. But the law applies to service providers, which means callers can use Zfone to encrypt calls, and the government can't demand that the users share the encryption keys in order to understand the contents of the call.

Q&A

Healthcare exec talks security

George Rathbun, director of IT architecture at Pfizer, is also the CTO for SAFE-BioPharma, the pharmaceutical industry group coordinating secure sharing of information with physicians and others. SAFE members, including Johnson & Johnson, Abbott Labs, Bristol-Myers-Squibb, Proctor & Gamble, and Merck and GlaxoSmithKline, have embarked on a shared authentication approach based on public-key infrastructure cross-certification. Rathbun recently chatted with Network World *Senior Editor Ellen Messmer to discuss how this security program works and what its implications are for users.*

How many members does SAFE have, and what has the organization accomplished since its founding?

SAFE, which stands for Signatures and Authentication for Everyone, was established about one and a half years ago to meet the challenge of global online identification of individuals in the pharmaceutical industry. We now have 30 [corporate and government] members. We initially looked at sharing a single directory, a database of personal information, to have a single authentication source. But instead, we went with an approach to public-key infrastructure (PKI) and digital certificates based on a bridge.

What is that exactly?

A bridge is a certificate authority dedicated to issuing certificates for bridging multiple certificate technologies. Today, there's a SAFE bridge certificate authority that issues cross-certificates to anyone that's part of it. We call it the "trust bridge." It's maintained by a vendor, CyberTrust.

So how does this digital-certificate cross-certification work for SAFE members?

Well, for example, all of the workforce at Johnson & Johnson is already PKI-enabled internally with their own digital certificates. J&J [last month] elected to have their corporation certified with the trust bridge. To do that, J&J went to a cross-certification ceremony where agents from J&J made sure the certificate authorities are aligned and there are no discrepancies between policies. It's quite a bit of work. But it creates a trusted network of [certificate

See Rathbun, page 20

DOD hosts massive interoperability test

41 nations test radios, satellite gear and IP networks.

BY CAROLYN DUFFY MARSAN

Trying to enable your network to communicate securely with a diverse set of suppliers and business partners? If you think you've got interoperability problems, consider the case of the U.S. Department of Defense.

The Defense Department regularly pulls together multinational coalitions for warfighting, peacekeeping and disaster relief operations with dozens of allies that change on a moment's notice. Each time, the Defense Department and its allies build a command and control network from a hodgepodge of radios, satellite gear and computers. That's why the department hosts annual interoperability testing events to help make sure its allies can communicate with each other during an emergency.

For the past two weeks, the U.S. European Command has sponsored Combined Endeavor 2006 (CE 06), a two-week interoperability event in Baumholder, Germany. CE 06 is the 12th annual event held in Europe, and it had forces from 41 countries, including Germany, France and the United Kingdom. Participants tested their ability to send data, voice, images and video over an IP backbone using a wide variety of mobile radio and satellite communications devices.

"As we get called to respond to crises like Hurricane Katrina or an earthquake in Pakistan, the political side develops coalitions, but we have to be ready to roll out the network," says Lt. Col. Joe Angyal, exercise director for CE 06. "It's a major challenge for us, because we never know what the coalition is going to be. . . . When we find ourselves out in the battlefield, it's like a game of Yahtzee for network planners like me."

Cisco provided the routers, switches and software that comprised the core network infrastructure for CE 06. The core network used 100Mbps links to connect four nodes in Germany and one satellite node in Bosnia. A HAM radio connection linked the European network to South Africa through Finland. Connections in the field were 2Mbps, which is typical for battlefield operations. The network supported 1,200 users.

"This is the first time that we have provided the network for Combined Endeavor," says Harald Vermanen, NATO liaison executive at Cisco. "We help the armies that have our products. We have participated in other interoperability tests or testing of new products ... but Combined Endeavor is by far the biggest testing event."

Combined Endeavor tested equipment in six main areas: single-channel radio; circuit-switched telephony, including VoIP; video teleconferencing; core services; data transmission systems, including routers; and transmission systems. CE 06 participants said more militaries are using IP as their

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TOLLY ON TECHNOLOGY

Kevin Tolly

Virtualization coming to desktops

Whether you like it or not, if you are at all involved with selecting the corporate desktop, you are going to have to deal with virtualization. Intel's recent announcement of its vPRO and its attendant publicity campaign will make sure of that.

It's not that virtualization isn't valuable, but its status as buzzword of the moment and its use across areas as disparate as desktops, servers and storage has unfortunately made the word devoid of almost any meaning when used on its own.

Virtualization usually refers to creating an environment that appears one way to users but is something else altogether in physical reality. Storage vendors talk of virtual tape in which programs behave like they are performing input/output operations on a tape, but the data is actually being written to disk or some other physical media.

For desktops and servers, the term typically refers to running multiple logical machines on a single physical desktop or server. In many ways this is similar to what Citrix offers with its Presentation Server, which virtualizes the desktop any application using its specialized version of the Windows Server operating system.

For all the hype the term is getting, virtualization is not new. IBM released its Virtual Machine/370 (VM/370) in August 1972 (www.nwdocfinder.com/3639) after having used it for internal operating system development for some years. Like today's offerings, it lets you boot a real operating system that talks directly to the hardware and offers a virtualized view of the same hardware to one or more guest operating systems booted under it.

That is one of the ways that we can virtualize desktop machines today. Running a system such as VMWare essentially implements IBM's concept on today's desktop.

However, that is not what Intel's vPRO is getting at. While I admit that it is not completely clear to me, it seems to be based on using Intel's virtualization technology and, specifically, its dual-core CPUs to do in hardware what the VMWare solution implements in software.

Apparently, one of the CPUs will be used to run a system within the system that will be separate and secure from the main operating system. Early ads state that this service machine can be used for tasks such as installing software, upgrading licenses and running diagnostics — but is not limited to these functions.

It also will be an enabling environment for third-party vendors. At the announcement, a Symantec executive was on hand to pledge his company's commitment to the endeavor.

Some financial analysts see vPRO as way to stop corporate customers from defecting from Intel-based desktops to those powered by Advanced Micro Devices. After years in the desert, AMD is doing well and making nontrivial inroads. The company stated in *The Wall Street Journal* that it is not worried about vPRO and it can offer most of the same features.

Start doing your virtualization homework now, as it seems almost certain that this year will see a major FUD war on the topic.

Tolly is president of The Tolly Group, a strategic consulting and independent testing company in Boca Raton, Fla. He can be reached at ktolly@tolly.com.

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communications standard and creating converged rather than separate voice, data and video networks. However, it was still tricky integrating older military radios, telephones and other communications gear with the modern Cisco backbone network. Many of the partners bring analog equipment," Angyal says. "It's a major challenge to integrate the older analog equipment with the completely IP backbone system."

Although the Combined Endeavor network did not carry classified communications, it was secured with encryption, because it carried sensitive information. "It was about the same level of security that we would roll out on an operation," Angyal says.

The Defense Department sponsored the event and estimates that the total cost to the participants was about $10 million.

A significant component of CE 06 is the process of documenting the testing that was done. The Defense Department will produce an interoperability guide published on CD-ROM that will be distributed to all the participants. The guide offers shortcuts to enable communications between the equipment that various militaries have deployed. It has more than 12,000 technical test results with accompanying technical data configuration and information.

"It's like having a copy of the test before you have to take it," Angyal says. "For multinational network planners, this guide takes out all the guesswork."

Many IT companies, including Cisco and Marconi, donated equipment for CE 06 testing, but military staff ran the tests.

"This interoperability guide that we produce is very pure," Angyal says. "We have a high degree of confidence in it, because the soldiers who operate in the field conduct the testing. We don't have people from Cisco running the tests.... All the soldiers that are involved are IT specialists."

Although the focus of Combined Endeavor is on technical testing of equipment, the exercise lets the Defense Department improve interoperability on the IT staff and policy levels, too.

"We bring these guys together to understand and communicate with each other," Angyal says. "We also test on the technical level, router to router and switch to switch, as well as procedural interoperability, in terms of how you use IT and how you deploy IT. Finally, we test operational interoperability."

Participants of Combined Endeavor say similar but smaller-scale operational testing could be useful for network managers at large corporations or municipalities.

"If you're General Motors, you might want to figure out the companies that you want to work with and the level of network access that you want to provide them, then you'd figure out some test strings and bring in an independent consultant to verify the testing. Then you'd document your testing and publish it as a guide for you and your partners," Angyal says.

Cisco says it sees similar testing among law enforcement officials worldwide.

"It makes sense from the view of the police in Amsterdam running interoperability tests with the Dutch Army," Vermanen says. "They are testing this kind of communications and procedures to deal in the best way with disasters like Sept. 11."

Multinational companies that work in remote locations also could benefit from interoperability testing in the field.

"If you're an oil company getting into an area where there is hardly any communications that is good, you might want to find out up front whether your communications systems are going to work ... with the local fire department," Vermanen says.

Combined Endeavor includes 23 nations of NATO, 12 members of NATO's Partnership for Peace and nonaligned countries, such as Switzerland and Austria.

Next for the Defense Department is a similar interoperability-testing event called Africa Endeavor, which will include 28 African nations. The U.S. Pacific Command will host its own interoperability event with 18 Asian nations in September.

"It's important to test products in a very realistic environment," Angyal says. "It's one thing if the equipment works in a lab. It's another thing to get it out here and get it dirty and put in the drinking-straw bandwidth that we have in the battlefield." ■

Rathbun

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authorities] for authentication. Vendors, such as CoreStreet, are also involved in supporting the bridge.

So how does all this technical effort come to serve business goals?

Doctors in hospitals are often participating in clinical trials. Intellectual property, such as laboratory notebooks and human studies, have to be signed by them or others. Today, documents receive wet signatures on paper, which is scanned. The goal is to do this electronically with digitally signed documents, all time-stamped. The SAFE authentication model means the doctor doesn't have to get a digital certificate from each company but just one issued under SAFE.

So if one key goal at SAFE is to get doctors using SAFE cross-certified digital certificates, how is that proceeding?

The current strategy is to have members invite doctors into this and pay for their certificates. It also requires a hardware device, too, to hold the certificate, a USB token or smart card. We believe that the Trusted Computing Group's Trusted Platform Module might also lend itself to this hardware model.

Why does SAFE insist on hardware-based certificates rather than software-based?

It was done from the point of view of the legal framework and policies that govern use of credentials. In the legal analysis, it was an issue of nonrepudiation and property protection, so that in a court of law the digitally signed document would still be accepted. With the soft certificates, the question is, would it hold up in court? Someone could ghost my machine or steal my password. But the Food & Drug Administration has said they'd consider soft certificates for submissions.

What's the biggest challenge in getting SAFE in use today, if it's not mandatory?

The challenge is the cost, which can range from $30 to $150. And we can't make the assumption the doctor alone reviews documents. Today, it's a preference among SAFE members to use the SAFE token in clinical trials, but we recognize there are still going to be wet-signed documents. ■

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SPECIAL FOCUS DATA CENTER NETWORKS

Data center networks often exclude Ethernet

BY PHIL HOCHMUTH

It's not often that Ethernet is on the outside of an emerging network technology market. But in linking some data center equipment to high-speed pipes, Ethernet sometimes has its nose pressed to the glass door, looking in.

For data center network managers, server interconnect technology falls into two distinct camps. For most, Ethernet, the world standard for networked computers, is how Windows, Linux, Unix and mainframes are plugged in and accessed. But in the rarefied realm of high-performance data center clustering, technologies such as Infiniband and some niche, proprietary interconnect technologies, such as Myricom's Myrinet, have a strong hold.

Over the past several years, Infiniband switches have emerged as an alternative for some users. Makers such as Voltaire and Infinicon came to market with high-speed clustering switches that connect servers with specialized host bus adapters (HBA). These systems can provide as much as 30Gbps of throughput, with latency as low as the sub-200-nanosec range. (By comparison, latency in standard Ethernet gear is measured in milliseconds, or one-millionth of a second, rather than nanoseconds, which are one-billionth of a second). This server-to-switch technology was so attractive that Cisco purchased Infiniband switch start-up TopSpin a little more than a year ago for $250 million.

A need for speed, and more

"Ethernet is a good, versatile technology that can handle almost anything," says Patrick Guay, vice president of marketing for Voltaire. "But Ethernet never had to address the levels of [traffic] efficiency and latency" required in clustered computer systems, storage networking and high-speed server interconnects, he adds.

"It's not that there is no place for 10G Ethernet in data centers," Guay says. "There is just a certain subset of customers who need more than what Ethernet and IP offer."

This was the case at Mississippi State University's Engineering Research Center (ERC), which runs several large Linux clusters used in engineering simulations for defense, medical and automotive industry research, among other areas. The ERC's Maverick is a 384-processor Linux cluster connected by Voltaire Infiniband products. Voltaire's Intros 96-port Infiniband switch is used to connect the diskless processor nodes, which access storage — and even operating system boot images — over the Infiniband links.

This lets Roger Smith, network manager at the ERC, set up cluster configurations on the fly; however, many processors needed for a task can be called up quickly.

Such a setup requires extremely low latency, as the processors are pulling Linux operating system images over the Infiniband links, instead of through a local hard drive. Also, processes shared in RAM among the Linux nodes all run through the Voltaire switch.

"Ethernet was just not ready for prime time, to get to the low-latency needs in some data centers" over the last few years, says Steve Garrison, marketing director for Force10 Networks, which makes high-speed Ethernet data center switches.

The latency of store-and-forward Ethernet technology is imperceptible for most LAN users — in the low 100-millisec range. But in data centers, where CPUs may be sharing data in memory across different connected machines, the smallest hiccups can fail a process or botch data results.

"When you get into application-layer clustering, milliseconds of latency can have an impact on performance," Garrison says. This forced many data center network designers to look beyond Ethernet for connectivity options.

"The good thing about Infiniband is that it has gotten Ethernet off its butt and forced the Ethernet market to rethink itself and make itself better," Garrison says.

Ethernet's virtual twins

It's become harder to tell standard Ethernet and high-speed interconnect technologies apart when comparing such metrics as data throughput, latency and fault tolerance, industry experts say. Several recent developments have led to this. One is the emergence of 10G Ethernet in server adapters; network interface card (NIC) makers such as Solarflare, Neterion and Chelsio have cards that can pump as much as 8G to 10Gbps of data into and out of a box with the latest PCI-X server bus technology.

Recent advancements in Ethernet switching components and chipsets have narrowed the gap between Ethernet and Infiniband, with some LAN gear getting latency down to as little as 300 nanosec. Also, development of Ethernet-based Remote Direct Memory Access — most notably, the iWARP effort — has developed Ethernet gear that can bypass network stacks and bus hardware and push data directly into server memory. Improvements in basic Gigabit Ethernet and 10G chipsets have also brought latency down to the microsecond level — nearly matching Infiniband and other proprietary HBA interconnect technologies.

The type of high-performance computing applications used at Mississippi State also has been the purview of specialized interconnects for a long time. One brand synonymous with clustering — at least in the high-performance computing world — is Myricom. The company's proprietary fiber and copper interconnects have been in large supercomputers for years, connecting processors directly over the company's own protocols. This allows for around 2 microsec of latency in node-to-node communications, and up to 20Gbps — more than 16 times faster than 10G Ethernet — of bandwidth. But even Myricom says Ethernet's move in the high-performance data center is irrepressible.

"A great majority of even HPC applications are not sensitive to the differences in latency between Myrinet connections on one side and Ethernet on the other side," says Charles Seitz, CEO of Myricom. The company is in the 10G Ethernet NIC market, having released Fiber-based adapters, which can run both 10G Ethernet and Myrinet protocols. This evolution was caused by customer demand for more interoperability with the Myricom gear.

"What do people mean when they say interoperability? They mean its interoperability with Ethernet," Seitz says.

Universal acceptance

The widespread expertise in building and troubleshooting Ethernet networks, and universal interoperability makes it the better data center connectivity technology in the long run, others say.

"Ethernet does not require a certification," says Douglas Gourlay, director of product management for Cisco's Data Center Business Unit, which includes products such as the Fibre Channel MDS storage switch, Infiniband (from the TopSpin acquisition), and Gigabit and 10G Ethernet products.

"With Fibre Channel, you had multiple vendors building multiple products, so the storage vendors took it upon themselves to create a certification standard for interoperability," Gourlay says. "Now users won't deploy products that are not certified by that specification."

Gourlay adds that the industry is not at the point where Infiniband technology, or other high-performance computing interconnect gear, has a common certification standard, or has proven interoperability among multivendor products.

"You can probably bet that you can't build a network today with one of the narrowly focused high-performance computing [networking] technologies from multiple vendors." ■

Interconnect options

When planning what network technology to deploy in a data center, two options are emerging for high-speed, low-latency server interconnect technologies.

10G Ethernet	
Description:	The fastest Ethernet flavor available; new adapters and switches are coming to market that offer extremely low latency — in the sub-500-nanosec range.
Pro:	Generally uses standard Ethernet LAN gear, cabling and PC interface cards.
Cons:	Latency issues still persist, which could exclude the technology from the highest-latency-sensitive applications, such as clusters and grids. Speeds still lag behind some other interconnect technologies.
Infiniband	
Description:	Semiproprietary technology for interconnecting servers and switches.
Pros:	Extremely low latency — sub-400-nanosec — and high throughput rates of up to 30Gbps make it the most robust interconnect for data centers.
Cons:	Requires expensive, proprietary interconnect gear on server hardware, and switching gear that must translate between Ethernet/IP and Infiniband to communicate outside a data center or cluster.

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*The Radicati Group. Radicati White Paper "Microsoft Exchange 2003 Total Cost of Ownership."

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ENTERPRISE COMPUTING

Hitachi boosts high-end storage

The TagmaStore Universal Storage Platform gains iSCSI support, better replication and audit capabilities.

BY DENI CONNOR

Hitachi Data Systems last week said it has enhanced its largest storage arrays with software and hardware that give the TagmaStore Universal Storage Platform (USP) a 25% performance boost.

The company has enhanced the microcode and added optional 4Gbps Fibre Channel controllers, iSCSI connections and new load-balancing capabilities among the processors to enable the TagmaStore to operate at 2.5 million I/Os per second.

TagmaStore, which is available in three models — the USP 100, 600 and 1100 — is aimed at large enterprises running applications that process online transactions or consolidating storage and server resources.

The TagmaStore's virtualization capability can manage as much as 32 petabytes of external and internal Fibre Channel, network-attached, Enterprise Systems Connection or Fibre Connection storage.

With this release, the company has added iSCSI support.

"Customers can consolidate a large number of servers through the box," says David Floyer, CTO for IT consultancy Barometrix. "You can connect them with these virtual ports and reduce the cost of the connection."

The USP also features performance enhancements to its Hitachi Universal Replicator and ShadowImage In-System Replication software, which assist in safeguarding data for regulatory compliance or disaster recovery.

The Universal Replicator, long-distance replication software, now can accommodate the distribution of 64KB data volumes across as many as four TagmaStore USPs. Previous TagmaStore arrays could replicate data only between two systems.

The software also has a new capability called Delta Resync for open system and mainframe environments that lets a customer recover to a local or intermediate site when the primary site has failed. The new capability copies only data differences from the intermediate site to the disaster-recovery site during the recovery process, thus saving on the amount of data replicated and the time it takes.

The ShadowImage In-System Replication software, which allows data replication within the array itself, has been enhanced to accommodate more data volumes and has a performance increase of as much as 300%, according to Hitachi. It can perform as many as 128 concurrent operations, a fourfold increase over previous TagmaStores.

"From a practical point of view, the performance enhancement of the replication engine is the most important," Floyer says. "What could have been considered a bottleneck before is now four times as fast."

Further, Hitachi is adding audit capabilities to the TagmaStore that logs a history of all user-access operations for compliance purposes or for investigating the cause of errors. Customers can export this audit log to a variety of formats.

Hitachi says it has shipped more than 3,000 TagmaStores since the product's introduction in September 2004.

The cost of the upgraded TagmaStore starts at $600,000. The Universal Replicator and Shadow Image software are expected to be available next month. There is no cost for the upgraded microcode. The 32-port 4Gbps switch for the TagmaStore costs $100,000.

TagmaStore competes with IBM's TotalStorage DS8000 and EMC's Symmetrix DMX-3. While Hitachi has virtualization capability built in to the TagmaStore, IBM and EMC offer this capability via separate appliances. Further, Hitachi has a natural distribution channel for its products — both HP and Sun offer rebranded TagmaStores.■

Hitachi says its TagmaStore USP can virtualize as much as 32 petabytes of external or internal storage.

Short Takes

■ **HP** announced last week that it has upgraded its **ProLiant** servers and blade systems to include Intel's newest dual-core Xeon 5100 and 5000 series processors. HP says these processors improve performance by as much as 45%. The company also has added serial-attached SCSI drives and enhanced network adapters that support iSCSI, Gigabit Ethernet, remote direct memory access and TCP offload, as well as increased memory capacity. The new servers are expected to be available before the end of June.

PC blade maker ups management focus

BY JENNIFER MEARS

ClearCube is stepping up its focus on tools to manage its PC blades, as well as those from other vendors, as enterprises show growing interest in centralizing their computing resources.

Sentral 5.0, which ClearCube introduced last week, provides a single console for managing and monitoring hundreds or thousands of centralized PCs. The product consolidates several of ClearCube's existing management products and provides new functionality, including the capability to manage desktops running in virtual machines.

PC blades separate the guts of a PC from the client device, putting the processing power in data centers or computer rooms. Proponents say the approach streamlines management and heightens security by putting hardware in a centralized location.

While ClearCube created the market in 2000, HP and IBM have introduced PC blade offerings in the past year. Analysts say the idea of PC blades is catching on, especially as enterprises tap into virtualization to get more out of their IT resources.

With Sentral, which replaces ClearCube's Control Center management suite, customers can manage virtualized desktops, allocating resources as user needs demand, says Trent Fitz, software product manager at ClearCube.

"It can manage virtual machines, and that means mapping users to VMs, stopping virtual machines and restarting them," he says.

The software supports VMware, as well as Microsoft Virtual Server.

Other features in Sentral include a centralized dashboard for viewing all physical and virtual desktops, including utilization metrics, such as memory and network bandwidth; alerts for monitoring the health of physical machines; and the ability to create a custom view of devices, grouping them by geographic region or business unit, for example, for monitoring and management.

In addition to Sentral 5.0, ClearCube announced updates to its Dynamic Allocation Module and Switching Module. The Dynamic Allocation Module lets users connect to active sessions from any client device, while the Switching Module enables administrators to switch users between blades.

Sentral is in beta now but will be generally available in June and priced at just less than $300 with both the Dynamic Allocation and Switching modules, Fitz says.■

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APPLICATION SERVICES

Short Takes

■ **Microsoft** has released a near-final version of its software for building e-commerce sites and renamed the product **Commerce Server 2007,** from Commerce Server 2006. In a blog posting on the Microsoft Developer Network recently, Microsoft developer Ryan Donovan emphasized that the name change does not mean the software will be late. A focus of the upgrade is making it easier for customers to link their e-commerce sites with back-end applications from SAP and Oracle. This is achieved using BizTalk Server and its various adapters for linking to third-party applications.

Another selling point is an out-of-the-box starter site, which will include catalog browsing, shopping cart, profile management and other predesigned capabilities for setting up an online store. It will be available as a Web download when Commerce Server 2007 is released to manufacturing, which is scheduled for June. Other new features include support for the service-oriented architecture development model and integration with Microsoft's ASP.Net 2.0 and Visual Studio 2005. The upgrade also will add better reporting capabilities and new tools for managing orders and customers and support server clustering.

■ Messaging security appliance maker **IronPort** earlier this month announced an upgrade to its outbound e-mail filters that help companies stay compliant with regulations such as the Health Insurance Portability and Accountability Act and Gramm-Leach-Bliley Act. Available free to customers of the company's e-mail security appliances, the IronPort Compliance Filters include a preset collection of policies that can be deployed to help protect organizations from unauthorized dissemination of information over e-mail, officials say. The filters use a multicategory pattern-matching algorithm to find sensitive information in outbound e-mails and act on them accordingly.

Windows gets network boost

BY JOHN FONTANA

SEATTLE — Microsoft last week announced an add-on to Windows designed to improve network performance and scalability for such tasks as storage and backup when coupled with specialized hardware.

The Windows Server 2003 Scalable Networking Pack (SNP) is a network-acceleration and hardware-based offloading technology that relieves the CPU of certain tasks to improve performance. The enhancements, which are being made available as a free download, are targeted at storage, backup, Web hosting, TCP-based media streaming and real-time collaboration.

Users will need to purchase a specialized network interface card (NIC) to drive the software enhancements.

Microsoft demonstrated the add-on at its annual Windows Hardware Engineering Conference last week during a keynote address by Bob Muglia, Microsoft's senior vice president of the server and tools business.

The software and hardware combination is designed to ease network bottlenecks, such as CPU overhead and memory bandwidth related to network packet processing, and reduce the demands put on servers by today's Gigabit Ethernet speeds.

"Overall, we are talking about better performance and scalability for data-intensive workloads," says Ian Hameroff, product manager for Windows Server Core Networking.

Microsoft hopes the improvements mean that users won't have to purchase additional servers for their data centers or replace existing hardware to boost their network performance.

Microsoft will offer the SNP software for Windows Server 2003 (Service Pack 1 or later) in the 32-bit and 64-bit editions, and in the 64-bit edition of Windows XP Pro.

Hameroff said the operating system changes would not require changes to existing applications, network topology, server configurations or network-management tools.

The SNP architectural changes will be built into the next versions of the operating system, the Vista client, due to ship in November to corporate users, and the Longhorn Server, due in the second half of 2007.

Microsoft partners, including Broadcom, IBM and Dell, will supply NICs and preloaded hardware that support the SNP.

Microsoft has made the SNP architectural changes at the Network Driver Interface Specification (NDIS) layer. The purpose of the NDIS is to define a standard API for NICs. Microsoft has added three technologies to the NDIS layer — TCP Chimney Offload, Receive-side Scaling and NetDMA.

The TCP Chimney Offload provides stateful offload of TCP traffic processing to network adapters that have a TCP Offload Engine (TOE). The intent is to reduce CPU overhead by passing tasks such as packet segmentation to the adapter, which can free the CPU to support more user sessions and reduce latency.

The Receive-side Scaling allows inbound network traffic to be shared across multiple CPUs using the new network interface enhancements. Microsoft says the feature is a benefit to applications that run on multiprocessor machines and generate significant inbound traffic, such as Web hosting or file serving.

The NetDMA feature enables memory management through direct memory access offload on servers with technology such as Intel's I/O Acceleration Technology.

The three performance and network changes are just the first that Microsoft plans to make in the operating system.

With Longhorn, Microsoft will improve the administrative control over offload policies and support offloading connections when firewalls and an IPSec policy are used. Microsoft also will include offload support for TCP connections that are IPSec-protected. Vista also will include support for IPv6 and NDIS 6.0 APIs that allow multipacket processing on all data ports.

More information on the Windows Server 2003 Scalable Networking Pack can be found at www.microsoft.com/snp.■

Colligo builds offline client for SharePoint

BY JOHN FONTANA

Collaboration vendor Colligo last week released two clients for Microsoft SharePoint. One gives users the ability to take SharePoint content offline, including a wide array of metadata and information stored in lists. Users can then replicate changes made offline when reconnected to the network.

The second, Reader for SharePoint, is a read-only client that is available for free and is intended for use with read-only intranet sites built on SharePoint.

Microsoft offers two offline clients for its collaboration server SharePoint — Outlook and Groove — but Outlook offers only offline access to a limited amount of SharePoint data. The Groove option requires deployment of that client and its back-end infrastructure, and focuses on bringing documents into the Groove

See Colligo, page 28

Taking SharePoint offline

Colligo is introducing two clients that let users take offline files, documents and forms stored in Microsoft's SharePoint Portal Server and the forthcoming replacement, SharePoint Server 2007, which will ship with Office 2007.

Client	Description	Features
Reader	Geared for intranet site users.	Provides read-only access much like Adobe Reader.
Contributor	Targeted at project teams including sales, consulting, legal, engineering, IT and marketing.	Offline access to such features as document libraries, metadata on business processes, forms, contacts and lists.

NET INSIDER

Scott Bradner

The future library: A 50-petabyte iPod?

I started playing with digitized literature almost 25 years ago. A lot has changed in the digital books biz since then.

Some of the history, current status, future possibilities and clashing business models in this area were recently explored in a cover "manifesto" in *The New York Times Magazine* by *Wired* writer Kevin Kelly. Spoiler: It will all come out fine in the end, but the length of time you will have to wait depends on when Congress stops moving the copyright goal posts.

In the summer of 1982 a classics graduate student working in the computer lab I ran in the Harvard psychology department got a copy of the Thesaurus Linguae Graecae, a large batch of classical Greek literature that had been typed into computers someplace outside the United States, with HP co-founder David Packard paying the bill. I, along with people in the Harvard Classics and English departments, convinced the university administration to pay for a huge — at the time — 300MB disk drive to store this text as well as a collection of Middle English literature.

Over the next few years the graduate student, Greg Crane, now a professor at Tufts University, put together the first version of what became the Perseus Project. This is a Weblike mixture of text and clickable links to other material, done many years before the Web and search engines showed up.

This well-indexed online text changed what sort of things would be reasonable Ph.D. dissertation topics. Before Crane's work, a student could arrive at a topic after years of index-card-based investigations of how specific words were used in classical Greek; after Crane's effort, that became a weekend task.

Kelly's *Times Magazine* story (www.nwdocfinder.com/3637) explores what happens in a future where you might have petabytes of digital material being attacked by cutting-edge search engines. Kelly estimates that a 50-petabyte disk farm could hold all the 32 million books, 750 million stories and essays, 25 million songs, 500 million images, 500,000 movies, TV shows and short films and 100 billion public Web pages.

Quite a bit of the material is already digitized, including as new books, DVD movies and CD music. The story describes multiple projects under way to try to catch up with digitizing older books and discusses the legal and access issues caused by Congress' continual extension of the copyright period.

A few years ago in a column I quoted a student who told me "if it is not on the Web, then it does not exist" (www.nwdocfinder.com/3638). The same point was reinforced last week when I suggested that a graduate student see whether he could find some information on a particular topic in the library that was one floor down from my office, and he admitted to being in the library only once or twice — and had not looked anything up.

Kelly paints a picture in which physical libraries might not be needed, other than for books published by companies whose lawyers are not ready to embrace a searchable digital world. In Kelly's future, world books are no longer individual items but are parts of a vast relational database on steroids where your biggest problem will be figuring out how to ask the question you want answered. And to figure out what is left that could be a good dissertation topic. All in all, a very good read.

Disclaimer: If physical libraries fade away, Harvard is going to wind up with a lot of prime real estate that will be bitterly fought over, but I did not ask the view of the university library folk about *The New York Times* story, so the above is my own review.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@sobco

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Colligo

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Workspace interface.

Colligo also competes with a similar product from Digi-Link.

"This has been the Holy Grail for SharePoint users, because remote and mobile workers were not able to take work offline," says David Smith, an analyst with Gartner. He says, however, Colligo will face some competition with Groove, which Microsoft is marrying to its collaboration infrastructure around Office and SharePoint.

"Users will have to think about their SharePoint strategy when picking a client," Smith says.

Colligo's Contributor client allows users to capture all SharePoint data and take it offline by clicking a synchronization button in the client, which brings down all data or only preselected files. Colligo's software installs on Windows XP desktops and is designed to mimic the Outlook interface used for online SharePoint connections. Files are stored locally in a small encrypted database. Contributor supports all versions of Windows SharePoint Services and SharePoint Portal Server, and it does not require software to be installed on the server.

Users also can drag-and-drop SharePoint files into the Colligo environment. Contributor, which is built on the .Net framework, is targeted at SharePoint collaboration sites.

When Contributor replicates data from SharePoint it preserves document libraries, custom lists and views. Users are then able to edit the content offline. Contributor's synchronization capabilities include a conflict-resolution feature in case offline changes clash with changes made online by another user.

Microsoft's Office 2007, when it ships later this year, will support two-way synchronization of events, contacts, tasks and documents between SharePoint and Outlook, but it does not support other information available when users are online, including views, custom lists, issues and such metadata as author and review cycle status.

The new version of Office includes a Groove Server and client enhancements for SharePoint, including the new SharePoint Files Tool that lets you bring document libraries or a folder from a library into Groove. The enhancements include tools for discussion, files, meetings, calendar, forms, InfoPath forms, issue tracking, Notepad, pictures and Sketchpad. Colligo's Contributor is priced at $99 per seat. ■

ProactiveNet enhances net, app management software

Company adds user monitoring, business service console and SLA management features.

BY DENISE DUBIE

ProactiveNet last week announced an updated version of its flagship software that the vendor says can help customers better relate IT performance to specific business processes and track application performance.

The software, ProactiveNet 7.0, includes a Business Services Management console that lets customers view the relationships among applications, such network components as routers, servers and databases, and user machines, the company says. With this view, customers can determine more quickly the cause of a problem and minimize the effect on users.

The company also reworked the console to have configurable service-manager and operations-manager interfaces. For example, the former might report on a process, such as order entry slowing down, while the latter would report on the servers and network devices most likely associated with the degradation.

"ProactiveNet does not monitor for performance in the way the traditional management vendors do," says Jean-Pierre Garbani, a research director at Forrester Research. He explains the company can pinpoint application-performance problems by taking a vertical view of the application from the user machine to back-end systems.

While ProactiveNet competes with BMC Software, CA, HP, IBM and Mercury Interactive, traditional management systems can take a more all-encompassing view of network elements, but they may not as rapidly report the performance problem or pinpoint its exact source, he says. "With its approach, ProactiveNet does a lot of the correlation for the IT managers to determine how an event on a server impacts, say, the end user."

ProactiveNet 7.0 uses statistical analysis to determine the normal operating behavior of networks, applications and servers, and alerts network managers when abnormal patterns have occurred. This information can help users prevent a problem before it slows network, application and Web site performance, the company says.

ProactiveNet comprises several components: collectors that span the entire application-delivery path, a centralized repository and a polling architecture. The software installs on a dedicated server and communicates with existing third-party software agents distributed throughout the infrastructure. ProactiveNet also offers its own agents to be installed if there are no agents on the servers to be monitored. The agents process no data and sit dormant until ProactiveNet software requests performance data. ■

SERVICE PROVIDERS

EYE ON THE CARRIER
Johna Till Johnson

Telco bashing: It's just their turn

Some days it seems everything's conspiring against the big telecommunications providers — even themselves.

Last week I mentioned the potentially illegal handover of confidential customer data to the National Security Agency of which BellSouth, AT&T and Verizon have been accused. All three carriers say they've done nothing wrong — but there's a caveat: A presidential memorandum dated May 5 allows the director of national intelligence, John Negroponte, to authorize companies to conceal activities related to national security — giving the telcos full deniability.

This issue is likely to get messier before it's resolved. Several folks have filed lawsuits against the telcos, including a couple of lawyers in New Jersey who've filed class-action suits worth as much as $200 billion against Verizon and AT&T. That's in addition to the lawsuit filed by the Electronic Frontier Foundation against AT&T.

Customers and their lawyers aren't the only folks who hate the telcos. Regulators aren't fond of them, either. Consider the slew of regulations that target only providers that operate infrastructure. A couple of examples:

• The Communications Assistance for Law Enforcement Act (CALEA), which asks "facilities-based" providers to install wiretapping gear at their own expense in their networks. Vonage and Skype are, of course, exempt from CALEA requirements, on the grounds that they don't operate facilities.

• The Universal Services Fraud/Fund (USF). Remember "Bailouts for Billionaires?" (www.nwdocfinder.com/3641). The Universal Services Fund, which provides needy mobsters and billionaires with broadband access, collects some $14 billion from facilities-based telcos — once again, the Vonages and the Skypes need not contribute.

• The FCC seems bent on piling on the taxes, regulations and constraints on companies that purchase and operate switches — while protecting software-only VoIP providers, which, let's not forget, require those same "facilities" to offer their services.

The message? For God's sake, don't own facilities if you can possibly help it. Don't make money, or you'll get sued. And never, ever cooperate with the government — at least if you're a telco. (Yahoo and AOL say they comply with government requests to turn over data — no class-action lawsuits against them, so far.)

Am I defending the telcos? Hardly. As I've noted, if they've been breaking the law, they have only themselves to blame. And they do have a habit of acting like arrogant Big Brothers.

But there's something bigger afoot here. Every generation or so, there's a slew of new, hip, nice-guy players that are up against the entrenched, Big Brotherish companies. The new guys (in this case companies such as Vonage, Yahoo, AOL and Google) can do no evil, and the entrenched players can do no good.

Remember how the public felt about IBM in the '70s and '80s during the 14-year antitrust lawsuit? Ironically, by the time the suit concluded, IBM had started on its long, slow, decline in the face of disruptive technologies such as the PC and later, the Internet. (Telcos: Take heed!) Only Lou Gerstner's visionary leadership reversed that slide, by transforming IBM into a fundamentally different company.

And here's the ultimate irony: The new-age, nice-guy player that was boldly going toe-to-toe with IBM back then? Microsoft.

Johnson is president and senior founding partner at Nemertes Research, an independent technology research firm. She can be reached at johna@nemertes.com.

Short Takes

■ **Verizon Business** last week launched a suite of services designed to enhance performance of applications on Web sites. The new managed offerings, called **Application Acceleration Services,** accelerate the delivery of enterprise and e-commerce software applications, such as e-mail and online shopping carts. The services also can accommodate additional application traffic without increasing bandwidth or data center resources, and require no changes to the customer's application or infrastructure, Verizon Business says. Pricing starts at $6,650 per month.

AT&T offering managed RFID service

BY DENISE PAPPALARDO

AT&T is rolling out a fully managed service that supports RFID from end to end by joining a handful of vendors.

The company says it is working closely with Intel, BEA Systems and Symbol Technologies to deliver parts of its new RFID service, which was introduced last September.

There are five elements to the service, says Ebrahim Keshavarz, vice president of new services deployment at the carrier:

• Professional services analysis of business processes, ROI and design.

• Client premises management, including routers, wired and wireless LANs, and reader edge software management.

• Standard AT&T data transport service options, including VPN and Internet access.

• Hosted electronic product code (EPC) global database.

• A Warehouse Management System, through AT&T's subsidiary Sterling Commerce, used to track RFID delivery locations.

The carrier is supporting all elements except management of the RFID reader edge software and the hosted EPC Global Database. These will be deployed when testing concludes, Keshavarz says. The EPC global database is the industry-standard approach to hosting RFID data for customers, he says.

AT&T's RFID partners
Here is what each brings to the table:

Intel
Professional services and network processor technology

BEA Systems
BEA WebLogic RFID Edge Server, Enterprise Server and Portal software

Symbol Technologies
Mobile and fixed RFID readers

The carrier is trying to put together a best-of-breed RFID environment for customers from readers to databases stored at AT&T managed data centers, Keshavarz says. "We're not getting into the business of manufacturing tags or readers, but providing an integrated managed service to our worldwide network."

One industry analyst sees promise in the service.

"One of the big problems with RFID to date is the lack of integration among the vendors and carriers required to leverage the technology to its fullest extent," says Robin Gareiss, executive vice president and senior founding partner at Nemertes Research. "What's good about AT&T's move is that it's taking a leadership position with RFID by pulling together the pieces required to make the technology successful."

AT&T is partnering with Intel on two fronts. Intel's Solution Services is working hand in hand with AT&T's professional services group to provide RFID network assessment and deployment architecture to customers. The companies are co-developing repeatable architectures for RFID device management and administration.

The architecture work stems from Intel's developments in network processor technologies.

AT&T uses BEA software in its fully managed service, including the vendor's WebLogic RFID Edge Server, Enterprise Server and Portal. These products manage readers, filter and coordinate with operational processes, deliver RFID information and provide a platform for viewing this data. And AT&T is using mobile and fixed RFID readers from Symbol to support the service.

The carrier says it is also working with standards bodies, including the IETF and EPCGlobal (www.nwdocfinder.com/3640), to improve the manageability of RFID networks and devices.

AT&T says it has been operating an RFID service trial with two customers since late last year. ■

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■ PRODUCTS, SERVICES AND STRATEGIES FOR TYING TELEWORKERS TO THE ENTERPRISE

Telework tax-relief plan gathers steam

BY ANN BEDNARZ

Backers of a proposed bill to protect teleworkers from onerous state tax rules hope this could be the year the legislation sticks.

If passed, the Telecommuter Tax Fairness Act would prevent states from taxing income that nonresidents who telecommute to in-state employers earn while working from home.

The legislation is aimed in particular at New York, which is legendary for its stance on nonresident teleworkers. It requires those who sometimes work in the office of their New York employers to pay state taxes — not only on the income they earn while physically in New York but also on the income they earn at home. This often results in a double tax when the telecommuter's home state expects tax on the income the telecommuter earns at home.

The issue affects not only employees but also employers. Businesses can wind up having to deal with some sticky withholding requirements if employees are subject to double state taxation. Plus the risk of double taxes for employees may limit employers' ability to recruit nonresidents, says Nicole Belson Goluboff, a lawyer from Scarsdale, N.Y., who specializes in telework-related issues.

New York isn't the only state with a so-called convenience rule, but it's the most aggressive enforcer. "Convenience" refers to nonresident employees choosing to work from home because it's convenient for them rather than a necessity. Unless a telecommuter can persuade tax authorities that his work cannot be done in a New York office, the state isn't going to forfeit taxes.

New York recently revised its convenience rule, but nonresident employees still are required to prove necessity to avoid taxation on income earned working from home, Goluboff says. "Telework involves work that at its core is portable — you used to do it in the office, but now you don't have to. Very few telecommuters are going to be able to satisfy that standard."

A computer programmer living in Nashville challenged New York's tax policy last year in a case that turned a spotlight on the double-tax issue. Thomas Huckaby spent 75% of his time working from home for a New York employer and 25% at the employer's offices. Huckaby paid taxes to each state proportionate to the amount of income earned in each. But New York demanded taxes on 100% of his income.

A vote for telework

What it is:	The Telecommuter Tax Fairness Act
What it says:	The proposed bill would prohibit any state from taxing nonresidents on income they earn when they are working outside the state.
Key supporters:	Senators Chris Dodd (D-Conn.) and Joe Lieberman (D-Conn.); Representatives Chris Shays (R-Conn.), Tom Davis (R-Va.), Rosa DeLauro (D-Conn.) and Frank Wolf (R-Va.).
Timeline:	First proposed September 2004, resubmitted May 2005.
Why now:	Federal agencies are pushing for the public and private sectors to use telework to offset high gas prices, alleviate traffic congestion, and play a role in business continuity and disaster recovery plans.

He fought the issue in a case that ascended to the highest court. But in a setback for telework advocates, the Supreme Court in October declined to hear the case.

The court's decision not to address the issue "effectively authorized New York to continue to subject nonresident telecommuters to a double-tax penalty," Goluboff says. It also opened the door to other states that don't have — or aren't enforcing — a convenience rule to likewise start pursuing their own nonresident income tax.

"It's rather attractive to be able to collect tax revenues from nonvoting nonresidents," she says. "The Supreme Court's silence really dealt a very serious blow to the movement to expand the use of telework."

With the proposed Telecommuter Tax Fairness Act, telework advocates hope to undo some of the damage. The bill was first introduced in September 2004, but it failed to grab attention. It was reintroduced in May 2005 — this time with greater visibility.

Among the legislators who have joined the effort to get the bill passed is Rep. Frank Wolf (R-Va.), who is known for his efforts to require key federal agencies to certify that telecommuting opportunities are made available to eligible workers — or risk losing millions of dollars in funding.

Not only does the legislation have strong backers but also it comes at a time when government is strongly encouraging telework.

In a September memo, the U.S. Office of Personnel Management encouraged federal agencies to more aggressively promote fuel-consuming options, such as teleworking. Government executives also are championing telework as an essential tool for businesses in the event of a flu pandemic (see related story).

But there could be a high price attached to this emergency management strategy unless the Telecommuter Tax Fairness Act gets passed, Goluboff says.

"How can we let this very significant financial penalty sit there for doing precisely what the government and our employers are telling us to do?" she says. "This is absolutely the wrong time for there to be an impediment to such a critical tool, both for federal government and the private sector."

With all the attention being paid to telework programs, Goluboff says she hopes Congress will pass the act in the current session. A vote has not yet been scheduled. ■

Commuting to slow bird flu pains?

BY GRANT GROSS, IDG NEWS SERVICE

Parts of the U.S. government could shut down during a much-feared outbreak of avian influenza unless the government develops better telecommuting plans, two IT leaders told lawmakers recently.

Paul Kurtz, executive director of the Cyber Security Industry Alliance, and Scott Kriens, chairman and CEO of Juniper, told the U.S. House of Representatives Government Reform Committee that government agencies lack plans for long-term telecommuting.

Even as world health officials worry that the ever-spreading avian flu could mutate and begin being transferred from human to human, most federal agencies' telecommuting plans assume employees will be out of work for two or three days, Kurtz said. Strains of deadly avian flu, often called bird flu, have been reported in flocks of domesticated and wild birds in Asia, the Middle East and Eastern Europe since 2003. Despite fears that the viruses could spread among humans, there have been reports of only about 200 people contracting bird flu since 1997, and most of those people had direct contact with infected poultry, according to the U.S. Centers for Disease Control and Prevention.

Although Congress in 2000 passed a law requiring agencies to offer telework options, agencies are required to return any cost savings achieved through teleworking back to the federal budget, Kurtz said.

"There's really no incentive at the most senior level of agencies to invest in telework," he said.

The committee hearing came on the heels of a U.S. Government Accountability Office (GAO) report that said many U.S. agencies haven't developed emergency teleworking plans.

While federal agencies have increased use of teleworking in the past two years, only nine of 23 agencies the GAO surveyed reported they had plans in place for essential workers to telecommute, GAO said.

"Business managers realize that telework is a way to get optimal performance from their workers, allowing employees to get work done from home or the road," Kriens said in written testimony. "I find it ironic that many government managers reportedly equate telework with reduced employee work hours and lower productivity, believing in the outdated management philosophy that 'if I can't see you, I can't manage you.'" ■

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E-MAIL NEWSLETTER SHOWCASE: Messaging

Spammers take out revenge by shuttering security firm

BY MICHAEL OSTERMAN

Blue Security was founded with a simple premise: a) sign up lots of people who did not want to be spammed and then b) send e-mails to spammers en masse on behalf of these people asking that the spammers stop sending their junk to Blue Security members. The premise was a good one in some respects and actually convinced some spammers to take Blue Security members off of their list.

However, several spammers did not take kindly to Blue Security's efforts on behalf of spam victims and so attacked Blue Security and its customers with spam, denial-of-service attacks and threats. One threat indicated that Blue Security's database had been compromised, that the personal or business e-mail addresses of Blue Security's members were being distributed on the Internet, and that continuing to be a Blue Security member would result in a 20-fold increase in the amount of spam that members were receiving.

The result? Blue Security ceased operations last week. The announcement on the company's Web site said that Blue Security would throw in the towel, acknowledging that even if it resumed operations, spammers would just shut it down again.

To me, there are at least three important lessons we can draw from this:

1. Many spammers are extortionists. What happened to Blue Security is analogous to a telemarketer throwing a brick through your front window because you put your phone number on the Do-Not-Call List, and then promising to continue to throw bricks through the rest of your windows if you don't take your name off the list.

2. Don't buy from extortionists. Lenin said, "The Capitalists will sell us the rope with which we will hang them." Although I seriously doubt that many spammers are Communists, when you buy from spammers, you buy from the people who fill your mailbox with junk and who turn your PCs into zombies. Don't do it.

3. Keep your own house in order. If you have a home PC with a broadband connection, maintain it with good anti-spyware tools that will prevent your PC from becoming a zombie.

There are lots of good and inexpensive tools available that can help you do that, such as Sunbelt Software's CounterSpy, Microsoft's Windows Defender or McAfee's AntiSpyware, to name just a few of the many products that can solve this problem easily.

Osterman is a principal at Osterman Research. He can be reached at michael@ostermanresearch.com

E-MAIL NEWSLETTER SHOWCASE: Convergence

Skype stops charging for domestic calls

BY STEVE TAYLOR AND LARRY HETTICK

Skype continues to confound us with its business model — or what seems to be the lack thereof. It's kind of like the old joke about the company that plans to lose money on each transaction but will make it up in volume.

This behavior was exemplified recently when Skype became the first VoIP service (to our knowledge) to cease charging for domestic (U.S. and Canada) calls from Skype to both landlines and cell phones. And when we say "stopped charging," that's exactly it. The calls are free.

It wasn't exactly like the price was outrageous up until now. Calls were 1.7 Euro-cents per minute, which equates to about 2.1 cents per minute. Of course, with the abundance of bundles for "all you can eat" services, both from traditional telephony service providers and from cellular providers, many of us already found ourselves using Skype only for international calls or when special services were needed. And, by the way, Skype does still charge for its international services.

We can offer some speculation as to why the calls are becoming free. First, by offering the service for free, the cost of processing the charges can be avoided. (So far as we know, the detail reporting will still be available.) Second, the free calling will help get users in the habit of using Skype on a more regular basis, thereby increasing the use of ancillary services (such as voice mail). And as a related issue, this may increase the uptake of "Skype-In" inbound services. The bottom line is that Skype is taking the view that traditional telephony service providers have quietly admitted for years: the profits come from added-value services, not from the services themselves.

As a footnote, Skype finally added one of the most-needed features for international calls: translation service. For many of us, the problem with making international calls is quite fundamental. We don't speak the language. Skype and Language Line Services recently announced a translation service for $2.99 per minute for more than 150 languages.

Taylor is president of Distributed Networking Associates and publisher/editor in chief of Webtorials. He can be reached at taylor@webtorials.com. Hettick is vice president for Telecom Services and Infrastructure at Current Analysis. He can be reached at lhettick@currentanalysis.com.

TECHNOLOGY UPDATE

■ AN INSIDE LOOK AT TECHNOLOGIES AND STANDARDS

Protocol weds Ethernet and ATA drives

BY BRANTLEY COILE

Applications need massive amounts of storage, but servers have limited disk space. Moving storage out of a server and putting it on a network makes expanding storage easy. The ATA-over-Ethernet storage protocol (AoE) combines Ethernet and low-cost disks to create a simple way to connect storage to a network.

Much like the Fibre Channel storage protocol, which uses SCSI disk commands over fiber optics, AoE is designed to transport ATA disk commands over standard Ethernet without using TCP/IP. Eliminating the complexities of TCP/IP and Fibre Channel makes AoE storage inexpensive and easy to use. AoE enables unlimited scalability, and disks can be shared by any servers on a network.

AoE is a command/response protocol that puts Ethernet connectors on disk drives. AoE clients use a block device driver (initiator), which lets a very large number of AoE devices (targets) appear as local disks. The AoE protocol enables a driver to discover target devices using configuration information stored in those devices.

Two types of messages are transferred via AoE. One carries ATA disk commands, and the other is used for discovering AoE targets. The beginning of each message identifies a target's physical location, carries a correlation tag and defines the type of message. The physical location is recorded in a 16-bit major and an 8-bit minor address.

The major address is usually an assigned chassis, or shelf, number. The minor address is a disk slot in the chassis or, in the case of a RAID target, a logical unit number. A correlation tag is used by the initiator to uniquely identify each message. This allows multiple outstanding requests at any given time.

ATA commands

The most common AoE message is an ATA command and data to be written to a target. The ATA command can be thought of as an operation code and a group of parameters. The target receives the command, copies the parameters into the disk's registers, issues the command and then monitors the status of the disk. On completion, the disk returns status and error register values, along with any data that has been read.

The second type of message is used in a configuration/discovery process. Each AoE target device has a short string of bytes that can be set, read and queried. Using Ethernet broadcast packets and the prefix match command, AoE clients can discover AoE targets available for use on a network.

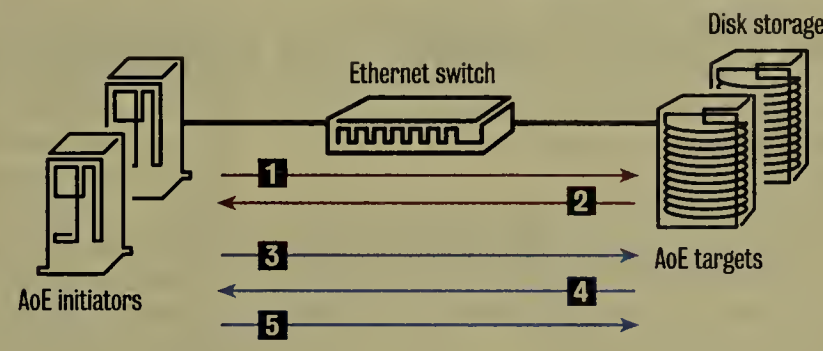
AoE storage devices can be single disks or groups of disks assembled into RAID volumes. They can be partitioned like any disk. AoE devices can be cooperatively claimed by a single AoE client, or simultaneously shared by multiple AoE clients in clustered environments. Because AoE devices are block storage, they can be used as raw storage disks or mounted with any disk file system. AoE devices can be managed with volume-management software tools and become part of large storage systems. AOE storage devices are suited for applications that require low-cost and scalability, including server clusters, disk-to-disk backup, e-mail servers, databases, medical images and records, video surveillance and many others.

The specification for AoE, an open protocol, is available at www.nwdocfinder.com/3629. Most popular Linux distributions include AoE drivers, and hundreds of users are benefiting from expanded storage using AoE.

Coile is the founder and chief technical officer of Coraid and a co-author of the AoE protocol. He can be reached at info@coraid.com.

HOW IT WORKS: ATA over Ethernet

The AoE storage protocol uses Ethernet to create a storage-area network.



1. AoE initiator broadcasts an AoE configuration string message to discover AoE devices on the network. The initiator repeats broadcast periodically.
2. AoE targets respond with available AoE device addresses.
3. AoE initiator sends AoE messages with unique tag identifiers and ATA disk commands.
4. AoE targets execute AoE messages (disk read/write commands) and echo tags in the responses.
5. If no tag response is received, initiator resends AoE message. Ethernet networks rarely drop frames, so retransmission is rare.

Got great ideas?

■ *Network World* is looking for great ideas for future Tech Updates. If you've got one, and want to contribute it to a future issue, contact Senior Managing Editor, Features **Amy Schurr (aschurr@nww.com).**

Ask Dr. Internet

By Steve Blass

How hard is it to get started with Ruby on Rails?

Ruby on Rails is a Web application framework written in the Ruby programming language. To get started, download the Instant Rails ZIP file at www.rubyonrails.org and extract the package into a directory with no spaces in the path name. The Instant Rails application contains everything you need, including Ruby, Apache, MySQL, PHPMyAdmin and Rails.

To get started, click the "I" button on the main menu, choose "Configure/Windows Host File" and add the following lines to the host file for the MyCookbook and Typo Web applications: "127.0.0.1 www.mycookbook.com" and "127.0.0.1 typo". From the main menu, choose Rails Applications/Manage Rails Applications, click the check box next to the cookbook application and click the "Start SCGI Server" button. Launch a Web browser and aim it at www.mycookbook.com to see the results.

The host file entry you made ensures that your browser connects to the server you just installed using the hostname expected by the application. After this works, you can return to the main Instant Rails menu and turn on the included blogging application named Typo. Do it the same way you enabled the cookbook (check the box and start the SCGI server). Aiming the browser at http://typo then lets you configure your Instant Rails-based blog.

Blass is a network architect at Change@Work in Houston. He can be reached at dr.internet@changeatwork.com.

GEARHEAD
INSIDE THE NETWORK MACHINE

Mark Gibbs

A puzzle, some junk, electric sheep

First up this week, a question for Outlook users: In the calendar you have, by default, the Navigation Pane displayed on the left. In the menu it indicates this is a toggle that uses the shortcut ALT+F1.

We're using Outlook 2003 Service Pack 2, and when we press ALT+F1 nothing happens. We are also running a tool we absolutely couldn't live without, Caelo's Nelson Email Organizer Free 3.1 (www.nwdocfinder.com/3630), but we don't think that's the problem. Any ideas anyone?

Our second topic is stuff you don't need. Yep, when you start poking around in Windows, it is staggering what you can find that is running but doesn't need to be. What brought this topic to mind was finding the Java Update utility, jusched.exe, running on one of our PCs.

This piece of code doesn't take up much processor power, but its average working memory is about 692KB and its peak working memory is about 2,032KB. That doesn't sound too bad, but when you've got a dozen or more unnecessary processes just hanging around, you could be sacrificing 20MB of RAM or more!

Maybe it is our old-school background that makes this waste of resources so irritating. Back then a byte saved was, well, a byte saved; you bit packed data where you could and actually optimized code performance. But we had long sideburns and wore bell-bottoms, so it proves what you win on the swings you loose on the roundabouts.

In most Windows PCs you'll find a veritable cloud of "quick" launchers and helper utilities for applications such as iTunes, WinZIP and WinAmp (not to mention the aforementioned jusched.exe). And don't get us started on all the little support components for HP's printer and fax software. Death by overengineering.

One of the easiest ways to get rid of this crud is to run up msconfig.exe and look at the entries under the Startup and Services tabs. You will be surprised at how much junk is running. Just uncheck the boxes next to an unwanted program or service entry, and it will no longer get loaded at start-up. You can usually also kill the running versions of these items, but occasionally something ugly will happen, so rebooting tends to be safest. Note that sometimes the software that these chunks of code support will reenable the item.

> When you start poking around in Windows, it is staggering what you can find.

If there's anything in the list you don't recognize, just Google its name, and you'll find a number of sites that will explain what the software is for and how safe it is to disable. We like the WinTasks Process Library and the Network Techs Startup Database and Process Database (www.nwdocfinder.com/3631, 3632 and 3633, respectively).

Our final topic is a screensaver we love! No, we're not talking about our fabulous Gearhead Windows screensaver (which is still available at www.nwdocfinder.com/3634), we're talking about Electric Sheep (www.nwdocfinder.com/3635), which runs on Windows, OS X and Linux.

To explain this screensaver you need to understand how the images it generates are created. Using freeware called Apophysis (for Windows) or Oxidize (for Macintosh), you can create what are often stunningly beautiful fractal flames, images that are essentially histograms of iterated function systems (oh, that gave us goose bumps).

These flames are two-dimensional slices through a space of numbers. You can think of the slices being taken in sequence starting and ending at the same place, so the flames (otherwise called sheep) become animated loops.

Now the equations that define a sheep can be considered its genome. When a sheep you like is displayed by the screensaver, you can hit the up arrow to vote for it. If you don't like it, hit the down arrow.

The Electric Sheep server manages the flock — the collection of sheep downloaded by the sheep clients — and tallies the votes for and against each sheep. It then generates new sheep using a genetic algorithm. The new sheep will be automatically downloaded to your screensaver in the background.

Using Apophysis or Oxidize, you also can generate your own sheep and add them to the flock by uploading.

Is this computing stuff fun or what?! Tell us on Gibbsblog or at gearhead@gibbs.com.

CoolTools

Quick takes on high-tech toys. **Keith Shaw**

The scoop: Palm Treo 700p, by Sprint, about $400 (after rebates and agreement, plus monthly service). Verizon Wireless offers the 700p for a similar price, with varying data network service plans.

What it is: After testing the 700p (the Sprint version) for a few weeks, I can truly say that the smart-phone is the culmination of the "converged device" that many of us have been dreaming about — and vendors have been promising — for years. Not only does the 700p converge a mobile phone with a PDA, but it also converges a classy business tool with a personal entertainment device. If you've been looking for one device that does it all, look no further than the 700p (well, as long as you're happy with Sprint's or Verizon's wireless network coverage).

Why it's cool: Is it too early to call the Treo 700p smart-phone the product of the year? Perhaps, but it has raised the bar for excellence in the mobile device world.

The Code Division Multiple Access EV-DO wireless network provides broadbandlike speed for data access. In performance tests with the Sprint device, I achieved an average speed of about 820Kbps, well above dial-up speeds and previous mobile devices I've tried. The network speed is more than enough if you want to use the 700p for downloading e-mails and attachments. But all that speed seems wasted on e-mail and Web surfing, so Sprint and Verizon include on-demand video and music download services that highlight the high-speed network's strength. The basic previews are free, but you'll have to pony up additional coin for premium features.

Both carriers support dial-up networking, which lets you use the high-speed wireless network connection on the phone to connect to a PC. If you're out and about without a Wi-Fi signal or wired broadband connection, the Treo 700p can provide Internet access via USB cable or Bluetooth. In my tests, the Bluetooth connection worked perfectly, and I was on the Internet within minutes.

On the business side, the device comes with VersaMail to connect to common Internet mail providers but will also support POP and IMAP mail. For corporate mail, the device supports Microsoft Exchange ActiveSync (Exchange 2003). Other third-party e-mail providers (including Good Technology) have announced support for the 700p. Once you get your e-mail, the Documents To Go application continues to support the viewing of Word, Excel, PowerPoint and PDF file attachments, and users can edit Word and Excel documents on the device.

The convergence of network, applications and hardware make the Treo 700p a masterpiece.

As a personal entertainment device, the 700p includes a 1.3-megapixel camera/camcorder and the Pocket Tunes digital audio player, which can play music from a Secure Digital card. The Sprint TV application was OK; watching live TV or other video clips was hit or miss (sometimes the system timed out trying to connect, or I got jittery video). The camera and camcorder are vastly improved over early attempts at digital cameras on a PDA.

Some caveats: I don't have any big complaints, other than the usual issues — battery life, display resolution (320 by 320 pixels) and tiny keypad — which hamper all mobile devices. The pros far outweigh any cons.

Bottom line: If you've been aching for a converged device, you really can have it all with the 700p — the framework is there for you to get rid of other devices and find Nirvana (the bliss) or Nirvana (the band).

Grade: ★★★★★ (out of five).

Shaw can be reached at kshaw@nww.com

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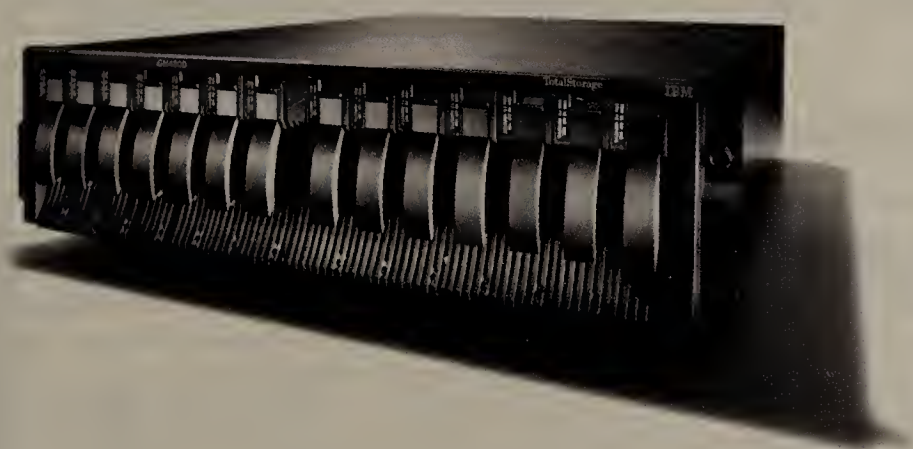

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On Technology

Michael Cooney

Can you trust China for outsourcing?

While China's outsourcing market continues to grow, recent events highlight nagging concerns.

A new study says China's software outsourcing services market reached $323 million in the first quarter of 2006, up almost 44% compared with the first quarter of 2005.

According to Analysys International, Japan is the biggest contracting market to China, accounting for 59% of the country's software outsourcing market. Europe and the United States account for 23%. The country's leading outsourcing outfits by market share are Neusoft, Hisoft and SinoCom.

Considering how fast the world outsourcing market is growing, it's no surprise that IBM, HP, Microsoft, Siemens, Unisys, Electronic Data Systems and others are all adding staff in China. And even India's outsourcing giants — Tata, Infosys and WiPro — have a presence in the country.

But, as in most countries where outsourcing/offshoring is conducted, security concerns are one of the largest issues customers face. India, by far the largest destination for offshored work, has had its share of problems, and it has ongoing programs and plans to try to deal with those issues.

While China hasn't had as many security/outsourcing-related problems — that we know of — the U.S government sent a signal last week that is indicative of underlying concerns that may influence the Chinese outsourcing market: the U.S. government said it doesn't trust one of China's largest manufacturers, Lenovo.

The U.S. Department of State said it won't use Lenovo computers on a classified network because of ongoing concerns about the company's Chinese government ties. The State Department's decision comes after House Rep. Frank Wolf (R-Va.) objected to the use of Lenovo's computers in a classified network connecting U.S. embassies and consulates.

In March, the State Department announced plans to purchase 16,000 Lenovo computers and related equipment for $13 million through a government contractor. While the computers will still be used, they won't play a role in any sensitive government networks.

But one has to wonder if this development will give pause to U.S. firms considering outsourcing work to China. Should this matter?

We would argue yes and no. Yes, obviously you should care about the security implications of outsourcing work to any third party, especially firms overseas where the laws concerning intellectual property and privacy may be looser.

But beyond that, no. China shouldn't be singled out as being particularly dangerous. China and even Russia will likely become world-class players in the outsourcing market, even if our government continues to harbor suspicions.

— Michael Cooney
News editor
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Opinions

Necessary lawsuits

Regarding Johna Till Johnson's column "Wiretapping the WAN: It's the law" (www.nwdocfinder.com/3621): Johnson does readers a service by explaining the Communications Assistance for Law Enforcement Act's (CALEA) requirement that carriers embed wiretapping capabilities into the fabric of their network infrastructures. But I disagree with her conclusion that the Electronic Frontier Foundation (EFF) shouldn't sue AT&T and instead should "go after the folks who required [wiretapping] in the first place." Given the federal government's growing penchant for secrecy, such lawsuits may be the only way to learn more about CALEA's potential to undermine our civil liberties. Go EFF.

Warren Wilson
Bellevue, Wash.

Missing pieces

I deployed a Cisco ASA 5510 for a small business several months ago and agree with your review of the product line ("Cisco hits on firewall/VPN, misses on tight management," www.nwdocfinder.com/3622).

The Adaptive Security Device Manager needs a makeover to integrate features. I made several attempts to set up the Web VPN's menus and gave up. Then I found the missing piece of the puzzle and set it up with little problem. I still need to figure out how to change the Web VPN's SSL certificate so the domain matches. My only issue with the hardware is that it doesn't support hairpinning, so you can't connect via a VPN and also access the Internet.

Cory Wagner
Systems administrator
Internet Production
St. Paul, Minn.

Porn not the biggest problem

Regarding Linda Musthaler's column "Porn purveyors may be in next cubicle" (www.nwdocfinder.com/3623): As network administrators know, porn is just part of the daily cost of setting what is essentially a television at each workstation if there are no filters or controls in place, and it is usually one of the lesser Internet problems. The cost in consumed bandwidth and productivity is just as bad with a variety of Web sites, along with instant messaging and streaming audio and video. Bravo for blocking porn, Musthaler says. How about blocking the sports site that just ate up 45 minutes of company time for those guys huddled around cubicle 12? People also regularly visit Web sites for their favorite TV shows or sports teams.

The point of the story is similar to pointing to a burning flag to detract from the shredding of the Constitution. Child porn is a horrible crime but should not be equated with the normal human sex drive, nor should the need for a company to protect itself from unwanted expenses and legal problems be used as an excuse to allow the government greater control over the Internet.

The problem with child porn as it pertains to network administrators has nothing to do with morality or legality but the quantifiable cost to employers in dollars and cents. If administrators are doing their jobs to look after their employers' bottom line, the morality or legality of the specific sites employees visit will be a nonissue.

Gerald Lanning
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E-mail letters to jdix@nww.com or send them to John Dix, editor in chief, Network World, 118 Turnpike Road, Southborough, MA 01772. Please include phone number and address for verification.

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ON COMMUNICATIONS

Nick Lippis

Alcatel + Lucent = Bay Networks

It only makes sense that as the service provider market consolidates, so too does the industry supply chain. With service providers focusing on broadband, enterprise customers and mobility, further consolidation is likely. With a smaller number of more powerful buyers of telecom equipment, it's natural that there will be a smaller number of equipment vendors. Which brings us to Alcatel and Lucent.

Last month Alcatel and Lucent announced plans to merge and form the world's leading communication solutions provider. Some highlights: The combined company will have a financial base and revenue of about $25 billion based on calendar 2005 results; the new Alcatel is still smaller than Cisco by some 17%, albeit Cisco's main revenue comes from the enterprise market; the new Alcatel will be a global convergence leader with one of the largest and most comprehensive wireless, wireline and services portfolios in the industry, and one of the largest global communications R&D capabilities in the world. As for management, Alcatel's Serge Tchuruk is to be nonexecutive chairman, while Lucent's Patricia Russo will be the CEO, based in Paris. The companies will have equal board representation.

I'm skeptical this will work. I have not seen a successful merger of equals in our industry. Someone has to take charge, especially in a mixed cultural environment such as the new Alcatel. The result may be similar to Bay Networks, which was the merger of equals, Wellfleet Communications and SynOptics. Bay was never able to gain a footing to compete effectively with

> I have not seen a successful merger of equals in our industry.

Cisco, the sole reason for the merger. Bay's problems involved distance and cultural issues too, but within the same country. In the end, Nortel acquired Bay.

The new Alcatel will have its revenue nearly split between North America and Europe, with each contributing about 35%, and the remaining 30% coming from Asia, the Caribbean, Latin America, the Middle East and Africa. This and the Bell Labs resource differentiate the new Alcatel from Cisco, Nortel, Siemens, Ericsson and others. But Lucent will now be part of the French socialist state, with larger pension and retirement plans than its American and European competitors. There will be a 10% reduction in the combined workforce of 26,000 over the next three years. Chances are that most of this reduction will come on the U.S. side, as it's more difficult to fire French employees.

This may be Cisco's golden opportunity to aggressively take share in the service provider market. It knows how to take advantage of a competitor when it's in the fog of reorganization and restructuring. The communications world continues to move toward a converged voice, video and data model on IP, for which Cisco is so well positioned. (For a deeper analysis of the Alcatel-Lucent merger, see www.nwdocfinder.com/3624, where Scott Bradner, Zeus Kerravala of the Yankee Group and Lippis discuss the pros and cons of the deal.)

Lippis publishes the "Lippis Report" newsletter, a resource for network and IT business decision makers. Get your free subscription at www.lippis.com. He can be reached at nick@lippis.com.

INDUSTRY COMMENTARY

Frank Dzubeck

IT and networking: Convergence or divergence

Having seen many vendor presentations announcing new products and strategies recently, I've noticed a common thread. The IT world has embraced the concept of total multivendorism based upon agreed-to industry standards. Corporate IT chooses vendors based not on incumbency but the age-old metric of price/performance combined with ROI and total cost of ownership. Integration, legacy application encapsulation and database federation have become software mantras. Data center consolidation has become a business issue, not an IT nightmare. Evolving a corporation into the world of service-oriented architectures (SOA) requires corporate commitment to business process and organizational changes that may have a far greater impact than IT technology changes.

The SOA concept, while business driven, is based upon the way we look at information and IT services. The IT industry has strived to eliminate vendor lock-in at any layer in the architecture. Decoupling of the layers using Web services instead of procedural calls creates a virtualized model from the application to the infrastructure layer. Information is divorced from computation and transmission. The theory is simple yet powerful and elegant. The execution is another matter.

As the SOA concept developed, issues began to surface. Security and management for Web services were the obvious first pain points. Industry forums quickly were created and populated with representation from all major vendors. The issues were addressed and standards published. The same approach was taken to create a service component architecture, which will provide a model for constructing and assembling a network of services. This will allow multivendor middleware enablement software, as well as application software, to interact at the component level.

The next creation was service data objects (SDO) that provides common access to data. SDOs make it easy to manage and exchange data across services with heterogeneous formats. The most recent SOA fix is the ability to federate and access/share information across multivendor configuration management databases (CMDB) and other data repositories. CMDB federation will give corporations another guarantee for choice and flexibility in terms of adding new IT hardware, applications and middleware, in

> Giving lip service to SOA compliance is not enough.

addition to assisting with corporate compliance and governance issues.

Building a corporate SOA is like building a cathedral. It may take years to accomplish, but the business rewards can be magnificent. IT vendors are committed to making SOA simplification a reality through multivendor technological agreements that are the burden of vendors, not customers. They realize that the size of the IT pie always will increase proportionally to business productivity and growth, and they all can share in that increase.

We in the network and communications world seem to be on a totally different path than our IT brethren. At a recent industry analyst presentation, Cisco equated simplification to fewer vendors and offered slide after slide to prove how complex it is to manage and operate any network in a multivendor environment. Is the network industry that different from the IT industry?

IT vendors have learned to cooperate and get results outside of standards organizations. The IT industry informally agrees on a problem, formally addresses the problem by a division or work/responsibility and then takes it to a standards group ready for implementation. Even then, customers may delay or never employ the standard, as with SNMPv3 and IPv6.

After years of proprietary focus, voice communications vendors realize that embracing SOA requires a new multivendor perspective. They are no longer in control of their strategic destiny but are part of the bigger SOA picture. Similarly, all software-based network and communications vendors must comply with SOA tenets or be relegated to encapsulated/federated legacy systems. That leaves a host of network infrastructure vendors, from the LAN to the WAN, both wireless and wireline, to become the equivalent of "dumb pipes" or allow SOA tenets to drive their intelligence.

Giving lip service to SOA compliance is not enough. Deeds speak louder than words. The network and communications industry must solve its own problems through industry cooperation rather than marketing procrastination. Corporate SOA progress cannot be impeded; if we in the industry cannot do it ourselves, the IT industry will do it for us.

Dzubeck is president of Communications Network Architects, an industry analysis firm in Washington, D.C. He can be reached at fdzubeck@commnetarch.com.

FEATURE

VoIP VoICEs

Six IT execs sound off on their successful VoIP deployments.

BY SANDRA GITTLEN

For many organizations, VoIP is still on the drawing board. But for six IT pros supporting users around the world, IP telephony is proving its mettle — helping them collaborate across great distances, rein in out-of-control communications costs and build a solid foundation for corporate growth.

CASE STUDY 1

Educational firm learns how to cut toll calls and boost international collaboration

Name: Ugur Usumi
Title: Director of Information Technologies
Organization: America-Mideast Educational and Training Services (AMIDEAST)
Location: Washington, D.C.
Industry: Provider of international training and education in the Middle East and North Africa

With 25,000 to 30,000 students each year depending on educational and training services, it's critical that the employees of America-Mideast Educational and Training Services be in constant contact with one another. But the fear of high toll costs left the company's 350 administrators in the United States, Middle East and Africa out of touch.

"When people think they're going to have to pay for a call, they don't make that call. Our toll charges were expensive, and we were paying quite a bit for each call," says IT Director Ugur Usumi.

To boost collaboration and lower international toll charges, Usumi added the VoIP feature to his Siemens PBX, enabling VoIP to most of the company's 16 international offices.

The AMIDEAST network includes a combination of IP phones and regular phones. Users on regular phones dial into the PBX, which switches the traffic to VoIP. For the IP phones, Usumi programs them at the home office and sends them to users in the field.

Each office can now call any other via four-digit dialing or by using the PBX in Washington, D.C., to call outside of the company. "In the past, that kind of calling might have cost $1.50 per minute. Now we're able to talk to the field offices any time we want without international toll charges," he says, adding that all the features available to users in the D.C. office are available to the field offices.

This has enabled increased collaboration. "We now have staff from Lebanon, Cairo and Morocco all on the same conference call at the same time. We are arriving at decisions much quicker," he says.

Usumi has tied in unified messaging with the new system to enable users to receive voice mail as e-mail and vice versa. He also rolled out softphones so users can take advantage of the VoIP system from airports and hotels.

He says the VoIP system has saved the company at least $1,000 per month in international calling costs.

See VoIP, page 40

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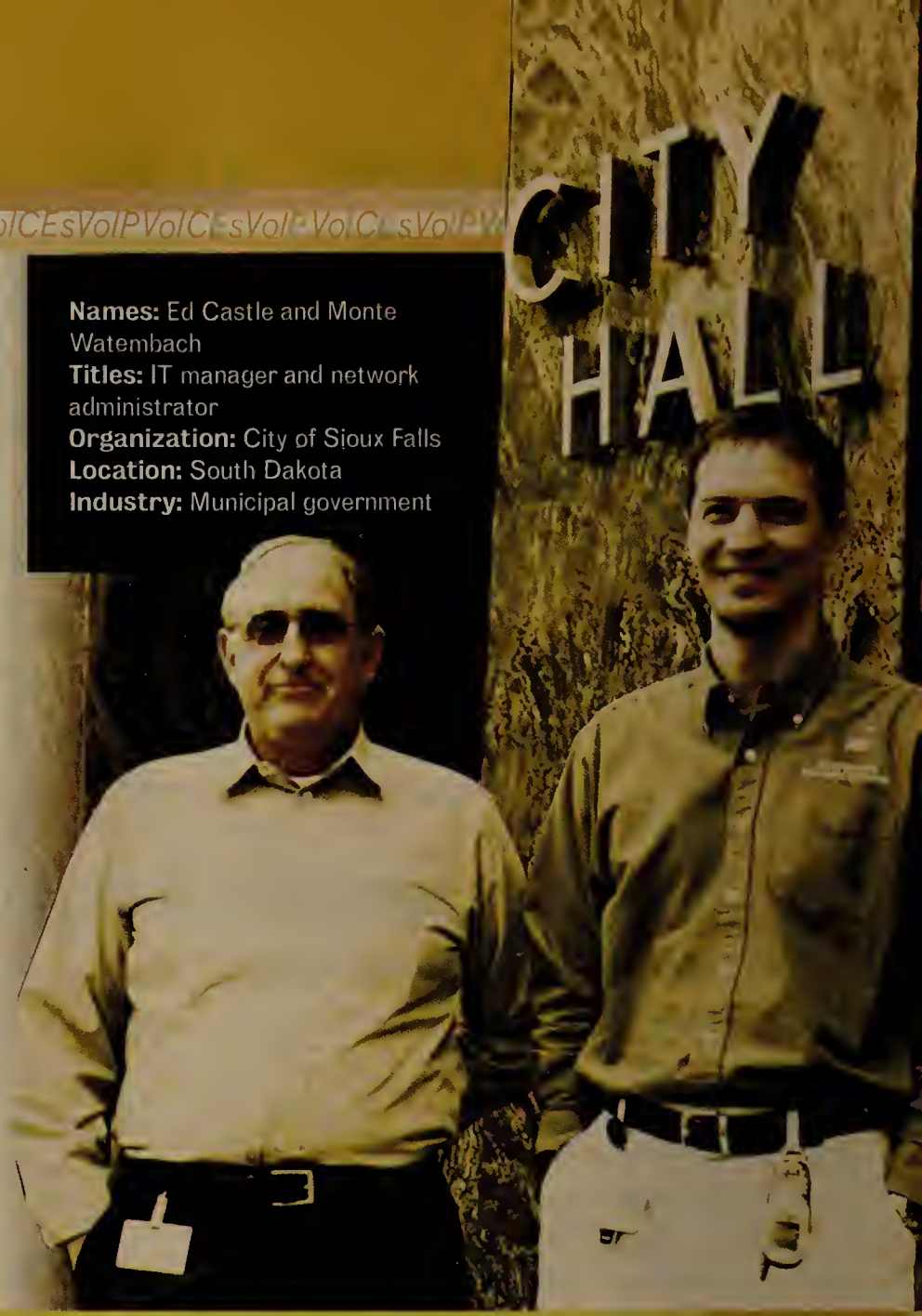
CASE STUDY 2

City's overtaxed workers able to improve customer service thanks to municipal VoIP system

Names: Ed Castle and Monte Watembach
Titles: IT manager and network administrator
Organization: City of Sioux Falls
Location: South Dakota
Industry: Municipal government



"I'm a systems guy, not a phone guy," says Monte Watembach, network administrator for the city of Sioux Falls, S.D. He makes this distinction as a preface to saying how easy it is to handle a VoIP rollout. "Managing voice mail servers and phone queues, that's something a sysadmin can easily pick up and do."

Watembach and IT Manager Ed Castle should know. They are in the midst of an aggressive rollout of VoIP to the city's 1,100 full-time employees. The project, which started in 2003 and is expected to conclude in the next few years, will cover most of the city's critical infrastructure, including city hall, the libraries, the mayor's office, the town hall, the utility billing office and the community health center.

With 400 users up and running on a ShoreTel VoIP system, the goal is to do 80 or more each year until the project is complete.

The focus has been on making the switchover from PBX-based phones to IP telephony painless. "Two people handle the rollouts now. We bring the users into a training room to teach them how to use the equipment. While they are in a two-hour session, we deploy the phones at their desks," Watembach says. The process is so smooth that most users are comfortable with the new system in two to three days, he says.

The biggest benefit they've seen is the ability for employees to share workloads. For instance, before the VoIP system, the community health clinic was overrun by customer calls. "They only had two lines so callers would often get a busy signal," Castle says. Now, calls can be queued, and if the operator has too many stacked up, other clinic workers will receive an alert to help handle the load. "We've raised morale for workers and improved customer service," Castle says.

The network overhaul has cost $250,000 and includes switches, desk phones, software components, installation and training. It's targeted at departments using PBXs that are 7 to 10 years old. With the new system, employees have a shared voice mail system and four-digit dialing. They also are integrating the VoIP system with Outlook.

"Engineering has a public folder with their contractor contacts that all public works employees can dial from. This saves them time looking for names and numbers — there is no manual dialing or typing, they just look in the folder and click on a name," Castle says.

CASE STUDY 3

Distributor nails merger-driven VoIP rollout by taking the outsourcing route

Name: Jeff Honerkamp
Title: COO
Organization: F.W. Honerkamp Co.
Location: New York, N.Y.
Industry: Wholesale distributor of plywood and lumbers

As a member of the fifth generation of his family's 135-year-old business, Jeff Honerkamp is proud of the customer service his company delivers. For example, industry veterans are onhand at all times to answer tough questions from customers about lumber and plywood.

With the 2001 acquisition of a Long Island laminate distributor, Honerkamp was looking forward to expanding the company's in-house expertise, but communications snafus, including an archaic phone system, hampered his efforts.

"The company we acquired had a phone system that was extremely outdated. We couldn't even transfer calls — we had to call the main number and then have the person paged. That took a toll on customer service as people were kept waiting," Honerkamp says.

Replacing the PBX-based phone system for 92 employees at both locations was out of the question. "With a company our size, I'm the one who knows the most about infrastructure — we don't have an in-house IT or telecommunications team to own and manage the PBX system," he says.

Instead, Honerkamp decided to use outsourced VoIP from M5 Networks. "Outsourcing takes the burden off me — they become my in-house telephone backbone of support service," he says.

To date, a third of the company is on the VoIP system, including customer service, accounts receivable and accounts payable, and Honerkamp says the company is already seeing the benefits.

"The VoIP system is our main telephone system, and it allows us to have customer service in one place. If someone calls, we can transfer them to the appropriate expert in either location right away, or they can contact that person directly," he says, adding VoIP enables better collaboration and communication in-house.

The company also is taking advantage of VoIP to allow employees to telecommute and the flexibility to hire for either location. "With tolls and commuting, it can be hard to find employees for each office. Voice over IP gives us the option of hiring someone in Long Island to work for the New York office. Also, if someone wants to be a stay-at-home parent, we can now accommodate that," he says.

Honerkamp used VoIP to keep an employee who would have had to leave the company for personal reasons. "He now logs on from his home in Pennsylvania with an IP phone. The system grabs his profile, and he can piggyback onto our lines as if he were physically here," Honerkamp says.

The best part about VoIP is the single bill he receives for locations and telecommuters, he says. "Before, I had seven or eight bills to sift through, and it was tedious looking through surcharges and fees. Most people sign off on those bills, but I've found so many errors. A VoIP bill, which has one monthly charge, is definitely a lot easier than a typical carrier bill to read."

CASE STUDY 4

Fast-growing consulting firm benefits from running VoIP over MPLS mesh network

When network administrator Matt Chiardonna began building a VoIP system for CCA Strategies' customer-facing call center three years ago, he quickly saw the technology would be beneficial for the internal phone system as well.

The company, a collection of business units dealing with different facets of benefits consulting, is growing 10%to 20% per year with sites springing up across the country. Already, CCA boasts more than 200 employees at 10 sites in cities such as Atlanta, Chicago, Denver and Los Angeles. Employees work out of small offices, home offices and from the road.

Chiardonna says the growth was putting a significant strain on the company's PBX system. Add to this that three years ago, the firm began hosting a call center to answer benefits participant calls. "We needed a system that could record, log and report on calls," he says. "Could our phone system support all this? The answer was not really."

Chiardonna turned to a software-based package from Interactive Intelligence that runs off Windows 2000 Server. Though that solved his call center problem, he was still stuck on the capacity limitations of the internal phone system.

"I thought, with our continued growth rate — we have four offices opening next year — do we keep putting stress on the current PBX or go in a different direction?" he says.

Chiardonna also faced the problem of not having IT staff in each location, so working with local phone companies to get up and running would have been difficult. "We have actuaries that play the dual role of IT person at each site," he says.

He decided to build out what he was using for the call center to the entire company. The first step was to create an MPLS network. "MPLS helped us mesh all the offices together," he says. With the help of technology retailer and consultancy CDW, he began deploying Polycom phones at each site.

"This is completely software-based. There is no hardware so there is no physical environment. We can have our phone system anywhere we want within our MPLS network," he says. He adds that the MPLS network also allows for redundancy and failover.

Rolling out the phones has been a learning experience. "We honed our strategy so that for each deployment, we walk into an office, count the number of users, buy phones, buy a switch to support those phones and have everything ready to go within two weeks," he says.

Users who travel between offices are excited about the new system and are anxious for it to be in every office. "Traveling users can go office to office and still have their phone system. The system also shows availability of consultants who are always in meetings. And there is no cost for calls between offices," he says.

CCA also uses the system to send and receive faxes. "Before, if someone sent a fax after-hours from Los Angeles to Chicago, it would be missed. Now all faxes are being sent straight into Outlook using the voice over IP network," he says.

The next phase of the rollout will focus on creating a centralized receptionist pool so that each office does not have to employ a person to answer phones. "Two or three receptionists across the country could answer calls and if one person is out, calls could be re-routed to another office. In terms of staffing, voice over IP represents immediate savings," he says.

Chiardonna has saved more than $100,000 by not having to deploy new hardware and voice mail servers or pay for phone service and support at each site. He says he's looking forward to adding new features to the network. "We've been using voice over IP for seven months and we've only scratched the surface of what it can do," he says.

Name: Matteo Chiardonna
Title: Network administrator
Organization: CCA Strategies
Location: Chicago
Industry: Benefits consulting firm

CASE STUDY 5

Semiconductor maker chips away at telco charges, improves security and adds unified messaging

With headquarters in Singapore, Chartered Semiconductors Manufacturing's U.S. sales, marketing and engineering teams log a lot of international miles and even more international calls. Trying to manage all those calls through the company's two PBXs in California and Texas was proving to be an auditing and security nightmare for Ron Yan, the company's IT manager in Milpitas, Calif.

"We had a function where an employee could call into the PBX and authenticate with a code and then call out internationally from there. But it was a big mess because you could only use one code so all 120 traveling users were using the same code," Yan says.

It was impossible to track who was calling where, he says. "We had no way of knowing who was abusing the system. Also, if someone left the company, you couldn't change the code because there was no way to let everyone know the new passcode in a timely fashion."

When Yan put out an RFP for a new communications system in 2004, he asked for "secure individual authentication that allows for access to be clicked off if they leave the company."

The only option was VoIP, he says. Yan installed an IP telephony network comprising Cisco gear and LiteScape Technologies enterprise software that integrates with his Lotus Domino environment.

"Everyone is now on voice over IP, there's no more PBX," he says. "When users are traveling, they dial an 800-number that routes them to Milpitas. They can make calls anywhere in the world based on their access rights."

Name: Ron Yan
Title: IT manager
Organization: Chartered Semiconductors Manufacturing
Location: Milpitas, Calif.
Industry: Chip manufacturing

Yan likes the ability to match travelers to calling rights because it cuts down on abuse and lowers overall costs. "I run reports every day on who is calling whom for how long," he says. He also quickly cuts off access to users when they leave the company.

His users say they like the system's new interface and unified messaging, which lets them access e-mail via voice mail and vice versa.

He's also saving money because he negotiates a single international rate from Milpitas, which is better than individual phone rates.

CASE STUDY 6

Voice over 802.11g wireless cures hospital's communication woes

Chad Landry, director of information services and telecommunications at Swedish Medical Center in Englewood, Colo., credits the nurses for sparking the wireless VoIP system that is now available to more than half of the hospital's 2,035 employees.

"They wanted wireless phones so that when they paged a physician, he could call them right back and not have to be transferred through the main desk," Landry says.

At first the hospital considered a 900-MHz system, but quickly found it to be kludgy and unable to integrate with other network components. "The phone size was awkward and in my opinion the technology was old and dying and there were severe interference issues," he says.

Landry realized the price of the 900-MHz system was within 10% of the $250,000 he would spend for infrastructure for the wireless VoIP network.

Name: Chad Landry
Title: Director of Information Services and Telecommunications
Organization: Swedish Medical Center
Location: Englewood, Colo.
Industry: Health care

The allure of the project was strong. "We could kill two birds with one stone: voice over IP and electronic administration of data records over the same wireless access point," he says. He adds that patient families, employees and physicians could access the Internet over the wireless network.

Landry was excited to see that the technology — a combination of Cisco gear and software and phones from SpectraLink and Cisco on an 802.11g network — had matured over the past few years. "If I had looked at this seven or eight years ago, I wouldn't have done it," he says. But security, reliability and availability had improved.

However, to be safe and to abide by federal and hospital regulations, Landry runs the wireless network separate from the hospital network. He also authenticates traffic through RADIUS and uses Wired Equivalent Privacy to encrypt voice communications.

The most difficult part of the rollout was educating hospital administration about the costs and benefits, Landry says. "I had to teach them about redundant routers, switching, on-call support and other technology," he says.

He also had to ask everyone for patience. "You don't roll out a voice over IP system and not expect to have issues." To control the situation, he rolled out access to one unit at a time. "We met with the department for a week, found out their workflow and configured the phones accordingly. Then we'd go back the next week and do a staff training. The biggest thing was that we were available to solve problems during and after the deployment."

The IT team started a hospitalwide user group so that all floors could get together for standardization. "Originally, when you went floor to floor, there were differences in how the technology was used," he says.

One early snafu involved batteries. "The phone batteries needed to be charged each day, but there was no routine in place. We received a lot of complaints so we had to integrate the charging into the workflow."

Today, more than 240 wireless VoIP phones are in use at the hospital by a cross-section of departments, including radiology, and Landry is activating new features all the time. "Now, we have a wireless paging system that can send text messages to the phone and employees' families can contact them without them having to leave their patients."

Gittlen is a freelance technology editor in Massachusetts. She can be reached at sgittlen @charter.net.

Tips from the trenches:

VoIP veterans offer advice for avoiding common mishaps.

Chad Landry on support contracts:
"Have your support plan worked out. We weren't thinking of the wireless voice over IP system as critical when we first started out. If the network went down at 2 a.m., someone left a message and we did a best-effort the next day to get it back up and running. Now we know it's critical and we have support contracts in place to bring people in right away to fix the problems."

Matteo Chiardonna on Power over Ethernet:
"If you use Power over Ethernet, make sure you put in redundancy and a UPS. We were concerned about loss of power. We wanted to make sure that the phone system stayed on long enough for an emergency call. It didn't take a lot to upgrade and account for this."

Ugur Usumi on call quality:
"If you're using voice over IP from overseas, try to get higher speed connections. The higher the speed, the better the voice over IP is, like everything else. However, even at lower speeds, with compression in the IP phones, we've been able to make quality calls."

Ed Castle on backup access points:
"We had a lot of phone services coming into one building. It was extremely important that we needed a backup access point. We were able to split access and put a T-1 into another location."

Ron Yan on picking vendors:
"Check out more vendors than you need to. Make sure you understand all the architectures and decide which one fits your company's needs. We have four vendors providing one voice over IP solution — all software-based. But if your company doesn't need that, you might want to look at streamlining so that it's easier to manage."

Jeff Honerkamp on outsourcing:
"If you're a small company, consider using an outsourcer. You don't have to worry about keeping firmware or software up to date and you don't want the hassle of upgrading reporting tools or call management tools. I don't have the time to invest in all that. Outsourcing allows me to concentrate on what I do best."

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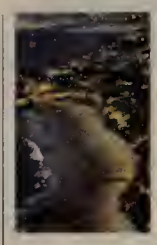

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The Breakdown

Features **40%**	**4**
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Security **20%**	**4**
Installation/configuration **10%**	**5**
Total score	**4.25**

Scoring Key:
5: Exceptional.
4: Very good.
3: Average.
2: Below average.
1: Subpar or not available.

NetBotz watches the NOC around the clock

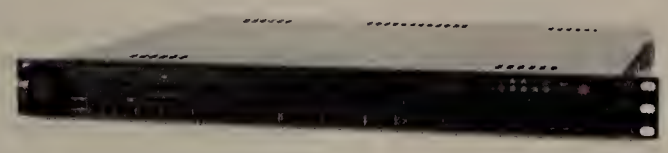
BY TOM HENDERSON AND LASZLO SZENES, NETWORK WORLD LAB ALLIANCE

Network operations centers often contain hundreds of thousands of dollars in equipment, not to mention the cost of the applications and processing on the equipment. NetBotz appliances and sensors provide extra eyes and ears to a network manager looking to have data for decision support, monitoring and auditing.

Keeping NOC costs down is tricky. They are usually distributed over a wide area in large organizations and are often run remotely, without resident personnel. Having the extra senses provided by sensors can help prevent disasters, as when things go wrong in unstaffed remote locations.

This remote sensing is what NetBotz, a division of APC, tries to bring to the table — and though these virtual senses are useful, we found that some have rough edges and need some maturation. Overall, we liked them and had more fun than we're supposed to in our tests.

NetBotz offers two versions — one that uses the NetBotz Central 1U rack-management appliance, and one based on the smaller NetBotz 500 appliance. The varied sensors are designed to be hung in NOCs or collocation facilities (aka server hotels), but they can be placed anywhere, and wall-mounting kits are available. There are two types of sensors — those that provide audio/video and those that are state-condition sensors, such as a water detector or a door opener. Some sensors can be fooled, but it was difficult to do so. In turn, the sensors connect to the NetBotz appliances and trigger events that can be documented (via logs) or spawn alarms that can be sent via SNMP or cell phone text message.



The NetBotz appliance fits in a rack and manages a number of sensors/monitors.

Both appliances are accessed through an HTTP interface (with Java client) or through the NetBotz Advanced View software (Windows 2000 or XP), which worked well with Internet Explorer and Firefox/Mozilla, but not with Apple's Safari browser. Sensors can be cascaded together to form networks. It's possible to use strictly Secure-HTTP after changing the default access from HTTP; accessibility otherwise is username/password driven (with no forced tough password policy).

A management console user interface (found in the Java and Windows application) links sensors used in the NOCs and other areas where equipment needs to be monitored visually for temperature, humidity, doors being opened and other conditions. In testing, the management infrastructure for NetBotz was easy to understand and access, although some of the sensors didn't seem matched to their packaging.

How we did it

We tested the NetBotz Java-based user interface with Windows XP SP2, Linux 2.6.11 and Mac OS 10.4 using Firefox, Mozilla, Internet Explorer and Safari (the K rendering engine couldn't display the NetBotz Web page video). We also tested the Advanced View software, which is captive to Windows 2000+ (we used XP SP2 64-bit on an HP ZV5000 notebook). We detected only start-up latency differences between the Java-based interface and the Windows software provided by NetBotz.

We tested five cameras, two door sensors and all of the sensors in each NetBotz rack or discrete appliance.

We tested the cameras in varying light conditions (2 lux to 45 lux), and used various methods to test motion detection, using filters and obfuscating objects. The motion detection sensors could be fooled but required great stealth, beyond what's reasonable, to fool them and stay below triggering thresholds. They are not perfect but can suit most applications. Color temperature accuracy was substandard but nonobfuscating. We tested traffic generated by various NetBotz sensors using an otherwise quiescent hub-connected network (IEEE 100 Base-TX) and measured with a Fluke Optiview II.

The SNMP triggers were tested and verified with InterMapper from Dartware. We used InterMapper to verify the traps and conditions sent by each of the sensor appliances.

Various methods were used to test temperature, humidity and dew point accuracy on the sensors, and they were reasonably accurate. The door sensor, which uses a magnetic switch, was easily thwarted by a magnet, so its effectiveness is potentially dubious.

Fun with sensors

Much of the work done by the NetBotz appliances deals with camera/video information. Cameras have user-defined resolutions and also are used for motion detection. Audio is available, but the audio and video aren't perfectly synchronized (close enough, though). The video from the cameras detect changes in the video raster to discern motion. This means that a fly buzzing around a camera isn't likely to set off the motion detection.

Dropping a paper clip in front of the camera didn't trigger the motion detection, but dropping a ballpoint pen did. Very slow motion prevents detection, but it's difficult to do this, even under low light conditions. We used a light-filtering device (to simulate smoke or fog), and the sensor still detected us under low-light conditions and the additional obscurity filter we used.

Oddly, the color temperature of the video was incorrect; it found many shades of black as blue. Also, the video could be stored only as an .AVI file when events were triggered. Otherwise, captured frames in .JPG format can be saved.

The cameras weren't good in very low light or dusk lighting environments. In addition, NetBotz has an option to save log/sensor data to a Windows share or Network File System mount, but we couldn't make these options work.

Other sensors connected to the NetBotz 500/420/320 appliances through USB ports. The fluid-detection sensor is designed to lie on the floor of a NOC to detect fluids, such as water. The sensing threshold is fixed for this device, which didn't sense droplets of water but easily detected a 0.5mm layer of moisture.

A door sensor we used was more interesting. It could detect the door opening and closing, but we could thwart it by using a strong magnet (stolen from a dead IBM disk

drive), so the sensor wouldn't register an opening if the magnet was placed nearby (an old burglary trick).

The NetBotz Sensor Pod, which can be connected to the NetBotz 500 or used stand-alone via USB connector, has connections for sensors other than those for a camera and temperature/humidity, which are onboard. Alarms are triggered when settings go beyond the preset boundary conditions. Sensors have high/low and range/time alarm triggers. All of the triggers can be sent via SNMP to the management console.

The NetBotz 320, another 1U appliance, includes the integral camera and temperature/humidity sensors. It is designed to be used in a remote rack to record visitors, trigger alarms and monitor information where it's placed. The sensors are not different but are in a different format than the NetBotz 500. The NetBotz 420 is a smaller version (with just one USB port) of the NetBotz 500. External sensors can be mixed and matched among the NetBotz product line.

The NetBotz Central Appliance has onboard storage and can mass-configure the thresholds, triggers and other settings of all the sensors connected to the system (or those it knows by IP routing). Tables and logs from the connected appliances were seen easily, and we found the device ideal for managing large numbers of remote NetBotz sensors.

The fluid-detection sensor is designed to lie on the floor at a network operations center to detect such things as water leaks.

Deployment issues

The nonrack devices (the 500 and 420) have numerous connections, including Ethernet, USB and power. In lieu of Ethernet, you can connect the 500 and 420 via a Compact Flash 802.11b card, but we didn't test this feature. The 500 and 420 are designed to be wall- or screw-mounted. Cables need to be fixed with cable ties; otherwise, they can be inadvertently pulled out of their respective ports. The appliances and camera/sensor devices have solid mounting hardware and are easily placed in position.

Using video in real time can use bandwidth. Just one camera at full resolution takes up 219kbps at a full 1,280 by 1,024 resolution (30 frame/sec), but the same camera at 160 by 120 resolution (postage stamp size) at 30 frame/sec takes up only 4.7kbps. If you're addicted to very high resolution and high frame rates, or need multiple cameras, you will need to create an out-of-band network. A more realistic raster size/frame rate should easily accommodate monitoring in-band without using extra network resources. The frame rate has a large bearing on traffic for the cameras.

We tested e-mail and SNMP alerts but didn't test the text message alerts, HTTP (post or get) or FTP (text or text with pictures). Sensor settings for temperature, air flow, audio (noise-level detection), dew point and humidity allow triggers for above/below value for time, min/max value, range and rate of increase/decrease. Binary sensors (the door and fluid detection) detected only an "on" state.

While the NetBotz doesn't fetch coffee, it does many other grunt functions of sensing conditions in a remote location. The sensors are reasonably calibrated, and the supplied Java/Windows software was secure and easy to understand. The appliances and sensors were mix-and-match, and we found them reliable and accurate. Video traits did have some tradeoffs. We were disturbed that we could easily foil the door sensor and also didn't like the inability to store images to external shares. Nonetheless, we were impressed by the thoroughness of the product set and the software that monitors the sensors.

Henderson is principal researcher at ExtremeLabs in Indianapolis. He can be reached at thenderson@extremelabs .com. Szenes, a researcher at ExtremeLabs, can be reached at lszenes @extremelabs.com.

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Lab Alliance

■ Henderson and Szenes also are members of the Network World Lab Alliance, a cooperative of the premier testers in the network industry, each bringing to bear years of practical experience on every test. For more Lab Alliance information, including what it takes to become a partner, go to www.networkworld.com/alliance.
Other members: Mandy Andress, ArcSec; John Bass, Centennial Networking; Travis Berkley, University of Kansas; Jeffrey Fritz, University of California, San Francisco; James Gaskin, Gaskin Computing Services; Miercom, network consultancy and product test center; Christine Perey, Perey Research & Consulting; Barry Nance, independent consultant; David Newman, Network Test; Thomas Powell, PINT. Joel Snyder, Opus One; Rodney Thayer, Canola & Jones; Sam Stover, independent consultant.

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Assemble the right players

Seek input in setting policies for information life-cycle management.

BY DENI CONNOR

Implementing the technology required for information life-cycle management is much easier than nailing down policy decisions about the value of data and where to store it. To make those calls, storage managers often need the help of department heads, compliance officers and the legal department.

ILM involves moving data to a storage tier that's appropriate for the value of the data to the business. This process helps companies save money, optimize storage resources and comply with regulations.

"If you get involved with legal situations, the storage architect is not qualified to make decisions," says Randy Kerns, an independent storage analyst. "Other personnel are really accountable, so they must participate in ILM or archiving decisions. Others — such as legal or compliance officers and department managers — must be involved, and if the storage architect is smart, he'll put the requirement on them to keep him from getting into trouble," he says.

For example, initiatives to archive e-mail, files or database records should involve the IT personnel responsible for the applications that generate this data. If you're archiving for regulatory compliance, you may need to call on the compliance officer, chief security officer or legal counsel, while CEOs and other business unit heads may need to be involved in setting policies for migration and archiving.

Michael Passe, storage architect for Caregroup Beth Israel Deaconess Medical Center in Boston, is on the cusp of implementing an ILM strategy, a project he began two and a half years ago with the purchase of tiered storage systems.

Passe, whose organization falls under the dictates of the Health Insurance Portability and Accountability Act (HIPAA), has been looking at e-mail archiving for litigation support and storage management and at content-addressable storage for longer-term retention of research data, forms and patient records.

Passe worked with the medical center's storage management, Windows server and messaging IT teams to help assess the hardware requirements for archiving. He decided to use EMC Centera content-addressable storage for long-term data retention and Symantec's Enterprise Vault for archiving e-mails.

"Once we had cooked out the technology specifics, it then moved up to the IT management level and legal departmental level to make policy decisions based on our findings of the technical capabilities of the software and in our case, hardware," Passe says.

He adds that was among the hardest of the steps to implement. "We think we are in the homestretch and will probably go live in one to three months, assuming we can finish our policy decisions, which often are more difficult than the technological ones," he says.

When Passe finally implements ILM, to set policies in Enterprise Vault and Centera that automate data migration, he will rely on the decisions the IT management and legal departments make about when and for how long data will be archived.

Matt Pittman, director of enterprise systems at Penson Financial Services in Dallas, also relied on the help of others to define his ILM and archiving strategy. In his case, the government regulations were different and more clearly defined.

Penson's e-mails fall under the governance of the Securities and Exchange Commission (SEC), which requires that e-mails for financial traders be kept easily accessible for two years and retained for seven years.

Pittman has two Xiotech Magnitude storage arrays with a mix of Fibre Channel and Serial Advanced Technology Attachment (SATA) drives and Legato's emailXtender e-mail archiving and DiskXtender database archiving products for migrating the Exchange e-mail, user documents and SQL server database data.

"I met with managers to get their feelings about the data, but IT kind of had an idea and a preconceived notion about what we were going to do," Pittman says. "We thought let's identify our sweet spot — the time at which we would move data to the [SATA] drives."

To do this, Pittman used a statistics tool within Commvault's Data Migrator product. He benefited by moving data to SATA disks and backing up data to those disks, cutting his backup time in half.

He also created policies in emailXtender that automatically archive e-mails after a user's mailbox consumes 750M bytes of space. Some departments that have a greater need for data, such as new accounts, have asked for higher mailbox quotas, but for now, Pittman's arbitrarily imposed quotas work for the rest. As with Passe, an ILM strategy continues to work only if it is continually assessed.

"We are assessing right now whether our archiving policy and quota limits are too aggressive or not aggressive enough," Pittman says. "We are looking where we need to tweak the policies. The exceptions we've made to that rule are the people like vice presidents and the CEO who need bigger capacities."

Three years ago Gary Joppich, senior network administrator for NuUnion Credit Union in Lansing, Mich., started implementing a similar approach to archiving data. Joppich's job was made easier because his credit union follows SEC rules. "Our team involved just two people: myself and the organization's compliance and security officer," he says. "We knew things had to be kept for that legal length of time — seven years."

Like Passe, Mark Moroses faces complying with HIPAA regulations for his medical images and patient records. "A lot of our data is regulated either at the state or the federal level, so we involve the legal department right off the bat," says Moroses, senior director of technical services and security officer for Maimonides Medical Center in New York.

He relies on the legal department to set the bar for e-mail archiving. "Right now, legal says they want to keep everything for three years. We think they are going to want to reduce that." Moroses uses IBM's Enterprise Storage Server for storing his medical information and e-mail and Datacore's SANsymphony virtualization product for data migration.

All these users wouldn't have been able to archive this data or formulate an ILM policy by their own wits. Thanks to legal, department heads and other personnel, their jobs are now easier. ■

Assess, classify, archive

The processes and people required for ILM implementation.

Assessment: Determine what data resides on what storage assets and where data should reside based on a criteria such as value or age.	Storage administrators, IT
Socialization: Present data findings to others and explain storage asset utilization and costs involved.	Department heads, legal counsel or compliance officers, business unit managers.
Classification: Determine how critical data is and how data is migrated over time. Classify by data type, organization, age and/or value.	Compliance managers, legal counsel if for compliance; business unit managers if for data value.
Automation: Establish policies to automate data migration.	Storage and messaging administrators.
Review: Review ILM policy as new applications are added to the network.	Storage administrators and legal, compliance managers.

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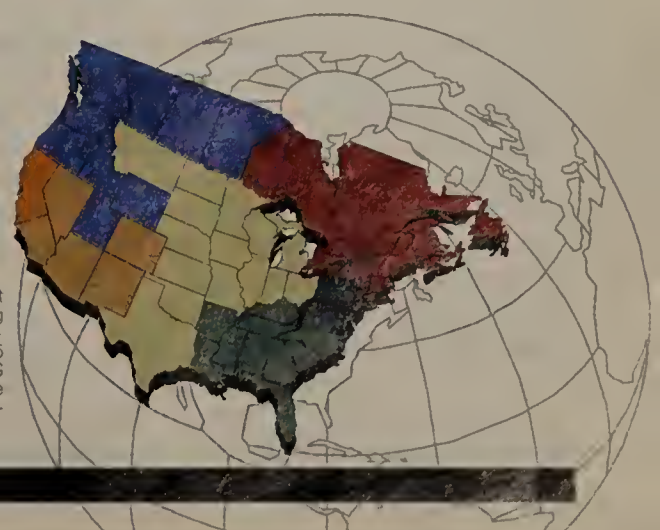

Rootkit

continued from page 1

Opponents say rootkits should never be used because they introduce potential vulnerabilities and are deceptive, while others contend there can be legitimate use for deep-stealth technology in both the enterprise and home.

The Electronic Frontier Foundation (EFF), which declared it was satisfied with the Sony settlement, is not among those envisioning a positive role for rootkits.

"I have yet to see a rootkit which did not raise security concerns, and am skeptical that there can be legitimate use of technologies that hide files from the user in an effort to thwart user control of their own computer," says Kurt Opsahl, staff attorney at EFF.

Security expert Bruce Schneier, founder of managed security services firm Counterpane, is equally adamant.

"Can there be benevolent rootkits? That's similar to the question of benevolent worms. The answer is 'no'," he says. "Rootkits use stealth to hide payloads, and that can cause problems. A user loses control with what's going on in their machines."

Antivirus vendors CA, Trend Micro and McAfee say they reject use of rootkits as a way to protect security software. "We call it stealth technology rather than rootkit technology, and by and large it's a negative thing," says Stuart McClure, senior vice president of global threat at McAfee.

But some say stealth technologies can be ethical and shouldn't be dismissed as absolutely evil.

"Rootkits are inherently deceptive, of course," says Christine Olson, project manager with StopBadware.org, the Cambridge, Mass., group formed by Harvard University and Oxford University to provide the public with a detailed list of software programs deemed to be unethical, deceptive or dangerous. "But there are instances where the owner of the machine might want to deceive others using the machine" and would have the right to do so, she says.

James Butler, CTO at Komoku, a start-up funded by the Defense Advanced Research Projects Agency to develop ways to detect rootkits, says the debate that started after security researcher Mark Russinovich discovered the Sony rootkit remains murky.

"The debate centers around whether it's acceptable for a company to install software that uses stealth in order to protect the company's software from being detected," he says.

In Sony's case, the way the software was written would let an attacker also use the stealth abilities to hide programs. "In the end, rootkits can be good or evil. It's all in how they're used," he says.

Gartner security analyst John Pescatore asserts corporations could benefit from more rootkit-like applications, such as those used to monitor employees. "Yes, there is a role for stealth in the enterprise world," he says, adding that in the home PC environment, parents might want rootkit-like ways to monitor what their kids do on a home PC.

Some IT and network professionals say rootkit-like technologies could play a valuable role in the enterprise.

"I'd consider stealth technology to monitor employees. The company owns the computers."

Enzo Micali, CIO, 1-800-Flowers

Enzo Micali, CIO at 1-800-Flowers, where flowers can be ordered online or by phone for delivery, says: "I'd consider stealth technology to monitor employees. The company owns the computers."

1-800-Flowers, which has 2,500 employees, uses the Securify product to watch for unauthorized network activity by employees, such as downloading large files unrelated to work or pinging servers.

Martin Lapointe, network manager at Canadian retailer Reitmans, concurs that "there is a role for stealth in the enterprise." But using any rootkit-like technologies would depend, at the very minimum, on ensuring their use conforms with user-consent and data privacy laws of the countries in which they're used, he says.

Sam Curry, vice president of threat management at CA, says rootkits in commercial software could be compromised, with devastating results. Plus, antivirus and antispyware software would look too much like the evil code it's trying to find and eliminate.

David Perry, Trend Micro's global director of education, says: "We don't want to look like the opposition" even though hiding software components from attack has appeal, he says.

But public opinion seems so firmly wedged against the idea of rootkits that security vendors shy away from any association.

Symantec, which declined to comment, endured its own public backlash and cries of "Rootkit!" when Russinovich discovered Symantec's Norton SystemWorks was using a cloaking technique to hide its NProtect directory for storing temporary copies of files the user has deleted or modified.

Bowing to public criticism, Symantec reevaluated the practice of hiding the directory — which it said it did to keep users from deleting files in it — and released an update in January so the directory could be scanned through manual or scheduled scans, not just an on-access scanner.

Some say there is plenty of commercial software that already uses stealth techniques, including that of most antivirus vendors.

"Most antiviral software and virtualization software, like VMware, are essentially rootkits," Gartner's Pescatore says. "Good rootkit-like software gives the user choice and informs the user, and the user purposefully and knowingly installs it." ■

The rootkit debate

Rootkits are always bad because they are:

- Deceptive to users.
- Introduce potential vulnerabilities.
- Can be hard to uninstall.

*Rootkits can be good for:

- Monitoring suspicious employee behavior.
- Protecting software from attack.
- Monitoring what kids do on home PCs.

*Any potential use of rootkits ethically would require appropriate user consent and have to adhere to the data-privacy laws of the country in which they are used.

VPN

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trative time. And once connections are established, encryption is more secure, by virtue of the per-packet keying, he says.

The bank is rolling out keys to 300 employees for routine use and also as a precaution against emergencies that require employees to work from home, Purdy says. Sandy Spring is buying enough locks to create secure site-to-site Internet connections among 34 locations, letting it decommission its traditional frame relay WAN and save more than half its WAN costs, he says.

A package of one lock, 10 keys and an enterprise manager master key costs $4,950. Locks and keys also can be bought separately: A lock costs $2,900 and a set of 10 keys with software drivers costs $1,250.

Sweetspot's tokens perform a different function. They also authenticate remote machines via two-factor authentication with a Sweetspot appliance inside the corporate firewall. But once authenticated, they act as VPN clients, creating a secure tunnel between the remote machine and the Sweetspot appliance. Alternatively, the tokens can tunnel to third-party VPN gateways. So far the tokens are compatible with VPN gateways made by Astaro, Cisco, Nortel and Watchguard Technologies.

Because the tokens perform the function of VPN client software, businesses don't have to install this software on the remote machines. They also eliminate cumbersome VPN sign-on procedures, says Sweetspot customer Mark Snyder, regional IT director for Native Air, a helicopter ambulance service in Mesa, Ariz.

Laptops used by medical personnel on flights to record patient information are equipped with the tokens to set up wireless VPN connections to Native Air billing and quality-control application servers at headquarters. The sensitive data must be secured to comply with Health Insurance Portability and Accountability Act regulations, Snyder says.

The tokens eliminate the need to train medical personnel on using VPN clients. They also result in reports getting filed from hospitals via broadband wireless Internet connections rather than waiting for personnel to plug into a LAN at a helicopter base. This clears paperwork sooner and gets flight crews ready for the next flight sooner, Snyder says.

The tokens cost $135 each. ■

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BACKSPIN Mark Gibbs

Global warming, a hot time for IT

It is now official, global warming is real. When I write "official" I don't mean that scientists have finally agreed. By official I mean President George W. Bush has finally, and one might note grudgingly, admitted that global warming is fact.

The grudgingly part is because for a long time the president would not admit to the evidence and now doesn't want to engage in any analysis of why global warming has happened, even though scientific data points squarely to human activities. The president's take: "... we need to set aside whether or not greenhouse gases have been caused by mankind or because of natural effects and focus on the technologies that will enable us to live better lives and at the same time protect the environment."

The idea that the problem can be ameliorated (it can't be fixed) without understanding the causes is as naive as trying to cure a chest pain but not checking to see if the patient is having a heart attack.

So what are the causes of global warming? The top culprit is the burning of fossil fuels, which increase the atmospheric concentration of greenhouse gases.

What are we doing about the problem? Katherine Ellison writing in *The New York Times* (see www.nwdocfinder.com/3655) on May 20 commented: "Scientists have long been warning that the world must cut back on greenhouse gas emissions by as much as 70%, as soon as possible, if we're to have a fighting chance of stabilizing the climate. Yet even with full participation by the United States, the controversial Kyoto Protocol — the only global plan in the works — would hardly begin to do that. Its goal is to reduce emissions by 5.2% below 1990 levels by 2012. And so far, the best plan offered by American politicians — the Climate Stewardship act sponsored by Senators John McCain (R.-Ariz.) and Joseph Lieberman (D.-Conn.) — has an even more modest goal: It aims to cut emissions in the United States merely to 2000 levels by 2010. And the Senate has rejected it twice."

But this state of affairs can't last, and now that the president is on board we can expect that over the next few years the way we run our businesses will have to change.

To reduce emissions we have to burn less fuel, which requires that we reduce our consumption. When it comes to electrical power we will have to use less, which in turn will probably require higher electricity prices to enforce reductions. The average national price of electricity in February (see www.nwdocfinder.com/3656) was 8.42 cents per kilowatt hour. What will it mean to your enterprise if the price becomes 16 cents or even 32 cents?

How will that influence changes in your data center?

Server consolidation using virtual machine technology looks like a good bet, as you can move to more efficient hardware platforms. You need to examine your system's life-cycle management strategy and make some reasonable assumptions about how power costs will rise and what your replacement and upgrade options will be.

Could this be a profound reason for businesses to migrate to Linux? Linux servers typically provide equivalent services to Windows servers at a lower processor utilization, which means that a single physical server running Linux can consolidate more server instances than the same hardware running Windows. What if you consolidated five servers instead of four? That could save 20% on your energy costs!

But there will be other issues to worry about. Over the last six years the number of major hurricanes has more than doubled, and this year we're seeing twice as many tornadoes compared with the 10-year and 30-year averages. Add to that ocean levels possibly rising 10 inches by 2050 and disaster preparedness takes on a new dimension.

Still doubt global warming is real? If the president finally accepts it then maybe it's time to start planning what you're going to do, because the consequences are starting to become apparent and can only get worse.

Give me a reality check on Gibbsblog or to backspin@gibbs.com.

NETBUZZ News, insights and oddities

Paul McNamara

More Google Trends: And the answer is . . .

So why, as asked here last week, does Google beat porn but not sex or Yahoo?

The apparent answer in a word: navigation.

There are other answers that would work, too — convenience, clueless bumbling, laziness — but the consensus reason for why search engine names Google, MSN and especially Yahoo outrank most any other search terms on Google Trends is that a boatload of people use the search box instead of their browser's address bar to navigate from where they are to where they want to go. . . . Go figure.

We're using the weasel word "apparent" to describe this answer because it comes not from Google but a clear majority of opinions offered by dozens of readers worldwide — with Australia, Israel and Pakistan among the foreign locales represented. Google's explanation for the phenomenon was that there is no phenomenon, merely an overriding interest in all things Google. (It stands to reason that there are people within the company who better understand what's going on here, but getting useful information out of Google is like wringing blood from a search engine.)

Let's hear from some of those who responded to last week's question:

"Here is the utterly simple explanation as to why Yahoo appears to be so popular," writes Cody Frisch. "Set Google to your home page; notice the cursor does not default to the address bar but rather the entry in Google. Now type in Yahoo and click 'I'm feeling lucky,' and you go straight to the Yahoo home page. . . . Why do I know this? I watch my father, day in and day out, enter URLs into the Google search box and search them — and then click the link. Despite my urging him to use the address bar it makes no difference. So the prevalence of Yahoo in Google Trends is simply a matter of slight computer illiteracy on the part of millions of people daily searching for URLs instead of using the address bar."

Joseph Daniels seconds the notion, while also addressing another piece of the puzzle, namely why the word Google itself ranks so prominently: "Google search is an easy, fast and reliable way to get to Yahoo's page. Or, if you're using a Google search box built into the browser, it's even a fast way to get to Google's own page. You type in one word and click twice. People know this and use it. Bookmarks are faster, sure, but they're not perfect. A lot of people don't, can't or couldn't be bothered to organize and use them."

Idan in Tel-Aviv believes that Google deserves a slice of the credit here, even if it hasn't exactly been forthcoming in explaining why: "Google's search algorithms are frighteningly good. So much so, that nowadays even 'bad' queries with a combination of very general terms will often find you precisely what you're looking for, without need to refine your query. The effect of this is that even savvy searchers often start with an 'I'm Feeling Lucky' approach; enter their first guess at how to search for something, and find what they want. No need to get creative with search refinements anymore."

Ken Bliss puts a finer point on it all: "Us darn humans just can't figure out how to use simple computers, because it is not simple."

Now that we have that settled — apparently — there was another contribution from an anonymous reader that deserves mention. In the original piece, we posited that the word Yahoo was "the undefeated heavyweight champ of search terms," because it outpaced anything else we typed into Google Trends. Well, as Howard Cosell might have called it, "Down goes Yahoo! Down goes Yahoo!"

"Just try checking Google Trends on 'download' and 'free' . . . they beat sex, Yahoo and whatnot by far," offers the reader. "That says something about search-engine users."

It says they're a bunch of freebie junkies, many of whom can't find their address bar with both hands.

Alternative theories still welcome. Buzz@nww.com is the address.

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